

**A SYSTEMS APPROACH TO PROJECT IMPLEMENTATION
WITHIN THE PUBLIC SECTOR TOWARDS FORMULATING A
FRAMEWORK FOR PROJECT EVALUATION**

By

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DECLARATION OF ORIGINAL AUTHORSHIP

I hereby declare that the thesis submitted in fulfilment of the requirements for the degree of Philosophiae Doctor in Construction Management in the Faculty of Engineering, the Built Environment and Information Technology at the Nelson Mandela Metropolitan University, is my own original work and has not previously been submitted to any other institution of higher education. I further declare that all sources cited or quoted are indicated and acknowledged by means of a comprehensive list of references.

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DATE

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This thesis is dedicated to the improvement of performance within the National Department of Public Works and the South African Construction Industry as a contribution to building a better country for all.

ABSTRACT

The procurement process, from the demand formulation to the final delivery of a public building to the end-user, is defined by the government in terms of procedures and policies to be followed, which is deemed to be ineffective and inefficient where the process as a whole from a client-value perspective, is flawed. Presently, the National Department of Public Works (NDPW) as a governmental administration is deemed to be a controlling institution and cost centre rather than a service provider. This mind-set is reflected by the inability of government project implementing agencies such as the NDPW to deliver projects successfully in terms of cost, time, and quality whilst failing to meet the government's socio economic objectives to create employment opportunities, stimulate economic growth, and transfer skills to the previously disadvantaged through black economic empowerment (BEE) initiatives.

Client satisfaction has widely been recognised by researchers as one of the key challenges for quality improvement in the construction industry. It is a vital factor in the development and management of the construction process, as well in the creation of efficient organisation-client relationship. In addition, client satisfaction is deemed to be a catalyst for client retention which is a success strategy for any organisation.

This thesis is primarily concerned with project performance and service delivery by the NDPW as a government project implementing agency that involves an integrated approach that considers the entire supply chain of a construction project. The success or failure of a project is not the effect of a single variable, or factor, but a set of variables interacting with each other to produce the final result. An extensive review of related literature that entails the analysis of publications related to the project implementation and construction project management realm was deemed necessary to formulate a clear understanding of the complexities of implementing projects within the public sector.

The use of systems thinking as the nucleus of the multi-methodological approach to this research was to assist in ascertaining the primary causes of the problem situation and to clarify the process of project implementation as a sub-system within the greater system of the construction industry. The success of projects depends as much on the client as it does on the implementing agencies, project managers (PMs), consultants, contractors and the suppliers or materials.

Extensive mixed-mode qualitative and quantitative surveys, and interviews were conducted among key participants in the South African construction industry which include public sector clients, PMs, both private and public sector, key NDPW staff involved with budget administration and project programme management, consultants, contractors, and members of associated bodies.

The research endeavoured to firstly understand project management, the role of all the stakeholders and the project implementation cycle within the NDPW from a systems perspective to facilitate conceptual understanding of project implementation within the NDPW. Secondly, to design a framework that models specific systems thinking methodologies and archetypes that would improve project implementation within the NDPW through the establishment of project support offices within the regional offices. And thirdly, to develop a framework for evaluating projects that would ultimately institutionalise project management methodologies as the corporate methodology, which will cultivate a situation where project success is the norm and consequently that would enable government project implementing agencies such as the NDPW, to retain their clients, contractors and other service providers. From this, benchmarking projects could serve as a guide for improved performance to others within the organisation and construction industry.

Notable contributions to the body of knowledge include the development of: a continuous improvement framework; a model for the implementation of project support offices; an organisational maturity model; a capability framework for developing organisational abilities, and a framework for project evaluation. Also included is the benchmarking of performance levels of the NDPW as an organisation that includes the contributions of the clients, PMs, supply chain staff, professionals and the contractors that identified areas for improvement and implementation, and recommendation for further research.

Keywords: South Africa, public sector, service delivery, performance, project support office, procurement, project implementation, evaluation, benchmarking, learning, project competent organisation.

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ABBREVIATIONS

ADA	-	Austrian Development Agency
ANOVA	-	Analysis of Variance
BEE	-	Black Economic Empowerment
CEO	-	Chief Executive Officer
CETA	-	Construction Education and Training Authority
cidb	-	Construction Industry Development Board
DPW	-	Department of Public Works (Provincial)
ECDP	-	Emerging Contractor Development Programme
EPWP	-	Expanded Public Works Programme
H&S	-	Health and Safety
GPIAs	-	Government Project Implementing Agencies
IDP	-	Integrated Design Process
IDT	-	Independent Development Trust
KM	-	Knowledge Management
LFM	-	Logical Framework Method
LO	-	Learning Organisations
MMR	-	Mixed Methods Research
MTEF	-	Medium Term Expenditure Framework
M&E	-	Monitoring and Evaluation
NDPW	-	National Department of Public Works
NYS	-	National Youth Services
P3M3	-	Portfolio, Programme and Project Management Maturity Model
PMBOK	-	Project Management Body of Knowledge
PMI	-	Project Management Institute

PMMM	-	Project Management Maturity Model
PMO	-	Project Management Office
PO	-	Project Office
PM	-	Project Manager
PPM	-	Project Portfolio Management
PSO	-	Project Support Office
ROI	-	Return on Investment
SMEs	-	Small- and Medium-size Enterprises
SNA	-	Strategic Needs Analysis
TBL	-	Triple Bottom Line
TRM	-	Total Responsibility Management
TQM	-	Total Quality Management
QA	-	Quality Assurance
QC	-	Quality Control
WBS	-	Work Breakdown Structures

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CHAPTER 1: INTRODUCTION, **PROBLEM STATEMENT AND OUTLINE OF THE RESEARCH**

1.1 INTRODUCTION

The National Department of Public Work's (NDPW) is standing at a crossroad and its future existence hangs in the balance (Republic of South Africa, 2012b: 1). Their business and daily operations are in the limelight of increasingly concerned public and client scrutiny. The media regularly cite allegations where the NDPW failed to deliver a prompt and efficient service to its clients and general public as the end users.

The Minister of Public Works, Mr. T.W. Nxesi (Republic of South Africa, 2012b: 1) advocates that since the 1994 elections, the NDPW and their clients have experienced the emergence of the philosophy and practice of 'corporate citizenship' where the government, and the NDPW have sought to gain broader trust and legitimacy through visibly enhancing their contributions to society through social upliftment by implementing affirmative procurement policies. This is to intensify the promotion of Black Economic Empowerment (BEE) and uplifting emerging contractors by giving previously disadvantaged contractors, both male and female, opportunities to tender for construction and maintenance projects. However, the clients' and communities' trust in various government institutions such as the NDPW has dissolved due to their poor performance. It is no longer enough to 'tell' stakeholders that the NDPW employees are good corporate citizens, they have to demonstrate it by improving service delivery and adding value while providing the service (Republic of South Africa, 2012a: 2-5, and Republic of South Africa, 2012b: 2).

"Despite the relative success of the post-apartheid South African Government, the country still faces serious challenges of unemployment, poverty and inequality. The failure of the post – 1994 government to meet its promises has sparked unrest in the form of service delivery protests where citizens are taking to the streets to raise their dissatisfaction over poor service delivery." (Managa, 2012: 1)

The South African government and the private sector have much work to do in creating the enabling environment required by the construction industry if this sector is to reach its full potential and maximising its contribution to the society and economy of South Africa. According to the Republic of South Africa (2009: 3-5), an enabling environment must be structured to promote investment, advance the development of the right skills and building

knowledge, build necessary capacity throughout both the public and private sectors, promote innovation and productivity, provide world-class management expertise, set the appropriate performance and quality standards, simplify supply and delivery procedure, foster the creation of partnerships and commit to targeted research and industry development.

1.2 CONTEXTUAL BACKGROUND

The World Bank (2012: 01) rates economic growth as one of the most effective ways of reducing poverty, and that infrastructure development is one of the key pillars of economic growth. Providing a developing country with good infrastructure along with the other drivers of growth – better health and education services, a positive investment climate, good governance that respects property rights and is corruption free – is fundamental to the mission of reducing poverty. The state president of South Africa, Mr. J. Zuma (Republic of South Africa, 2010b: 1) reaffirmed that construction plays an indispensable role directly and indirectly as a contributor to economic growth as it is a significant employer of people, it creates numerous economic opportunities for medium and small enterprises, its products have an extraordinary long life and they unleash abundant economic opportunities for their consumers and it contributes directly to improving the quality of life of its end users.

The South African government and construction industry (cidb, 2006: 7) has been engaged in a vigorous process to redirect the industry's growth and performance since 2000 while supporting the country's social and economic transformation which is aimed at sustainable growth, stability and employment, improved delivery, improved industry performance and competitiveness, value for money and empowerment. However, according to Lesele (2006: 10-22) the NDPW, which is one of the executing arms of the South African government, has built a reputation of not delivering and failing year after year to spend their allocated budgets and is under substantial pressure to cope with the increasing rate of environmental changes. This requires adapting through learning and change to create a situation where effectiveness, efficiency and project success is the norm. Another concern is also the manner in which the money is spent and whether the projects that were implemented really added value for the client and general public as the end user, and to what extent were the intended project objectives met.

1.3 STRATEGIC GOALS AND OBJECTIVES

As the custodians of all National Government assets, the NDPW is responsible for the construction and maintenance of facilities utilised by all National Government Departments that

mainly include the South African Police Services, Justice, Correctional Services and Defence, of which the legislative mandate is found in the Constitution of the Republic of South Africa, Act No 108 of 1996.

The Republic of South Africa (2005: 1) lists the seven strategic goals of the NDPW:

- Providing strategic leadership to the construction and property industries to ensure economic growth and development. It is required of every national department to ensure that each of the industries it is responsible for contributes to the national goals of economic growth, employment and investment;
- Promotion of BEE. Government has declared broad-based BEE as a national priority and adopted a national policy framework and legislation to give effect to it;
- Contributing to the National Goal of Poverty Alleviation and Job Creation. Government and its social partners have prioritised poverty alleviation and job creation at the Growth and Development Summit in June 2003 whereby unemployment has to be reduced by 50% by the year 2014;
- Contributing to the African Renaissance;
- Improving service delivery;
- Good corporate governance, and
- A comprehensive human resources plan supporting departmental business and government imperatives.

The Republic of South Africa (2005: 2) describes the three main objectives of the NDPW: to intensify the promotion of BEE, including emerging contractors by giving previously disadvantaged contractors, both female and male, opportunities to tender for construction and maintenance contracts; to promote human resources development through training and job opportunities for the poorest rural communities where community-based public works programmes are limited, and influencing delivery and investment in the construction industry by creating an enabling environment for reconstruction, growth and development in the construction industry of South Africa.

Lesele (2006: 1-11) advocate that the NDPW fails in their mission and objectives by not providing an effective and efficient service to its clients and is rightfully referred to as 'the please wait department' by their clients. The majority of problems being experienced on the NDPW projects relate to cost, time, and quality slippages that culminate in client dissatisfaction. The major contributing factor is time delays within the project implementation cycle that is

attributed to the intensively risk-averse environment in part the product of lengthy and inefficient project implementation processes. Hence the meagre achievements of the NDPW's strategic goals and objectives.

1.4 PROGRAMME AND PROJECT MANAGEMENT WITHIN THE NDPW

Construction programmes and projects, according to Patrick (2004: 10), are not just about deliverables. They are about objectives. Projects are not just about implementation. They are about benefits. Projects are not just about the 'what's'. They are first and foremost about the 'why's'.

Russell (2003: 7) states that "programme management exists to bridge the gap between corporate strategy and the actual needs of the client. It enables the fundamental question to be asked before starting the project of where the projects fit into both the client's and the NDPW's corporate strategy?"

The NDPW, as all other government departments are utilising the Medium Term Expenditure Framework (MTEF) to facilitate budget forecasting for a minimum of three years and a maximum of five years. Theoretically the MTEF should be an effective budgeting and programming tool. Conversely, the effectiveness of the MTEF is hampered by the continuous changes of the government's aspirations that change the NDPW's clients' needs and corporate strategies resulting in having prioritised projects that are not funded and non-prioritised projects that are funded. Each financial year additional projects are also added which were not on the original programme for which funding must be sourced to meet the needs of the clients. This, according to Lesele (2006: 118-19), ultimately causes a delay in project implementation as the lead time required to implement medium to large size projects is at least six months due to internal processes that must be followed that is governed by various policies, regulations and Acts. The NDPW's project programme management is also hampered by the fact that the clients themselves often do not know in which direction their organisation is going, their actual needs nor their project priorities that ultimately leads to more delays in implementing projects and increased under expenditure.

The increasing international interest in the concept of project management and its required competencies is in demand for adding more value while delivering results through projects. This places emphasis on the brief from the client, the competence of the PMs as individuals, the project teams, the project organisations such as the NDPW, and the contractors that must be synthesised to deliver projects more effectively and successfully.

Effective business strategy is a crucial element to ensure survival of the organisation that creates opportunity for expansion and continuous improvement. The philosophy of project and programme evaluation to facilitate the building of project-competent organisations has become the focus point of organisations within the construction industries of the world to meet the challenges of the 21st century.

A successful project is generally defined as having achieved the project objectives of being within the cost and time parameters of the project, at the desired performance / quality level while utilising the assigned resources effectively and efficiently, and most importantly, the end product is accepted by the client. It is quite clear that all projects have three things in common, they involve uncertainty, they involve risks and they involve three different and opposing commitments, being completion dates, budgets and scope of work with the added variables of client expectations and satisfaction.

Within the NDPW there are another five dimensions: health and safety compliance; quality of the client's contribution and involvement; the attainment of the social objectives of upliftment facilitated by affirmative procurement strategies in making use of previously disadvantaged emerging contractors and local communities to execute projects; personal development and growth of employees while executing their work, and continuous improvement of organisational effectiveness and efficiency facilitated by project evaluation.

There is thus far more to project management within the NDPW than what meets the eye. The fundamental questions emanating from this is whether it is the PM's responsibility alone to achieve all of the objectives and how should all the objectives be balanced out without giving preference to one objective to the detriment of the others, and achieving project success?

1.5 WHY A SYSTEM THINKING APPROACH?

Managing projects is part of a bigger system, which is the project implementation process within the NDPW as an organisation. It is not possible to study the process without studying the people who are involved in the process that constitutes the whole, i.e. the system of project implementation.

A system is a group of interacting, interrelated and interdependent components that form a complex and unified whole. Systems have several defining characteristics according to the ACIG (2005: 1):

- Every system has a purpose within a larger system;
- All of a system's parts must be present for the system to fulfil its purpose optimally;
- A system's parts must be arranged in a specific way for the system to carry out its purpose;
- Systems change in response to feedback, and
- Systems maintain their stability by making adjustments based on feedback.

Hitchins (2005: 1) refers to a system as “a set of organised, interacting parts which, when complete, exhibits properties or capabilities of the set as a whole which are not attributable exclusively to any of the parts.” This definition according to Hitchins (2005: 2), is rather deeper than, perhaps, it may seem at first. It contains the following concepts:

- The notion of sets, i.e. groups of things which share some common label, purpose or characteristics;
- Organisation. The set members are not simply scattered around, but that they exhibit form and structure. Systematic concepts emerge from this notion;
- The idea of completeness. The set must be complete for the overall features of the set to emerge;
- Emergent properties. Those features of a system which are exhibited by the whole, but which are not attributable exclusively to any part;
- The importance of interactions between the parts as contributing to the whole, rather than just the sum of the parts;
- The concept of holism, that there are properties of the whole that cannot be reduced, and
- The basis for hierarchy, which is perceptible when a set is complete, when that set exhibits emergent properties and which then, allows the parts and their interactions to be considered as an entity at a higher level of perception.

Traditional decision making tends to involve linear cause and effect relationships. The whole complexes of bidirectional interrelationships become clear when taking a systems approach. Instead of analysing a problem in terms of an input and an output, for example, system thinking studies the whole system of inputs, processes, outputs, feedback, and controls. This larger picture will typically provide more useful results than traditional methods.

System thinking helps to integrate the temporal dimension of any decision. Instead of looking at discrete 'snapshots' at points in time, a systems methodology reflects change as a continuous process. System thinking is a world view based on the perspective of the systems sciences, which seeks to understand interconnectedness, complexity and wholeness of components of systems in specific relationship to each other.

System thinking is not only constructivist, rather system thinking embraces the values of reductionist science by understanding the parts, and the constructivist perspectives which seek to understand wholes, and more so, the understanding of the complex relationships that enable 'parts' to become 'wholes'.

System thinking, according to Immediato (2006: 3), is a process of achieving a more accurate representation of the world or situation by examining the system and comparing it to reality. System thinking is used when: a fresh approach to resolve present problem situations when all previous attempts failed; the problem has been around long enough to have a history. System thinking assists in tracking trends that are driving the problems; there are different views and theories regarding the cause of the problem, which exhibits a very dynamic complexity; pursues understanding, which can inform action and be informed by it; biases of different perspectives are more easily identified; promote inquiry and challenge preconceived ideas; find the systemic root causes of stubborn problems; test the viability of previously proposed solutions; sift out major issues and factors, and explore short- and long-term impacts of alternative or newly proposed solutions or actions.

1.5.1 SYSTEM THINKING AS A PROCESS OF INQUIRY

Immediato (2006: 3) maintains that system thinking gives a more accurate picture of reality, to facilitate working with a system's natural forces in order to achieve the desired results. He also states that it encourages people to think about problems and solutions with an eye toward the long run. Immediato (2006: 4) adds that system thinking is a conceptual framework that offers users a powerful new perspective, a specialised language, and a set of tools such as rich pictures and causal loop diagrams that can be used to address the most stubborn problems in our everyday life and work. System thinking facilitates understanding reality that emphasises the relationships among a system's parts, rather than the parts themselves. In system thinking linear causal thinking is replaced by thinking in circular causal effect terms as systems incorporates feedback, which introduces the circularity and attempting to balance itself.

There is a critical difference between doing things right and doing the right thing. Much of the effort in programmes of change is given to doing things right. There is not much questioning whether these are the right things to do. According to Seddon (2009: 2), doing the right thing means people have to learn how to view an organisation as a system and understand the implications of that view for what it means to manage.

Seddon (2009: 2) argues that each part of the system can affect the way other parts work and the way all parts work together will determine how well the system works. This is a fundamental challenge to traditional management thinking. Traditionally organisations have learned to manage an organisation by managing its separate silos such as sales, marketing, production, logistics, or service. Managing in this way always causes sub-optimisation and certain parts achieve their goals at the expense of the whole.

The ‘compartmentalisation’ logic of traditional thinking according to Seddon (2009: 2) is not limited to the design of organisation structures. A systems view of organisations shows the fallacy of conceptualising performance problems as people problems. It should not be considered separately from other ‘task’ features. Failures in co-operation, poor morale and conflicts in our organisations are symptoms, their causes lie in the system. Training in teamwork or co-operation will only treat the symptoms. The causes usually remain. Managers have been encouraged to think of the ‘human’ or ‘soft’ issues as distinct from hard or ‘task’ issues when they might be better understood if they were seen as interdependent.

Managers of ‘traditional systems’, according to Seddon (2009: 2), impose conditions which limit, constrain or in other ways control people’s behaviour in ways which result in sub-optimisation. Being prevented from doing their work as they could, people become demoralised. Managers then treat people as though they are the problem.

1.5.2 SYSTEM THINKING IN PROJECT MANAGEMENT

System thinking means seeing patterns in the organisational whole, instead of just the parts while learning to reinforce or change system-patterns. Traditional PMs, according to Haner (2011: 1), solve problems by breaking things down into discrete pieces and working to make each part perform as well as possible. The success of each piece does not add up to the success of the whole; it is the relationship among parts that form the whole system. Haner (2011: 2) also adds that “it is important to see organisational systems as a whole because of their complexity.

When project leaders can see the structures that underlie complex situations, they can facilitate improvement that requires focussing on the big picture.”

According to Senge *et al.* (1994 cited by Kieholtz, 1999: 5), “a good systems thinker, particularly in an organisational setting, is someone who can see four levels operating simultaneously: events, patterns of behaviour, systems and mental models.” The ‘realist’ is satisfied with the minimal data, the ‘analyst’ is only interested in the ‘best way’, and the ‘idealist’ is interested in the whole and understands relational logic while the ‘synthesist’ prefers getting to the real problem. The ‘pragmatist’, when competent in all of the systems, can flex between these systems, drawing on whichever one or combination thereof that suite the needs at any given situation.

System thinking also considers the different views of people. It assumes that each individual will see the world differently, influenced by their different mental models, which will often lead to varying understandings and evaluations of situations. Inevitably, the culture and politics of an organisation will include diverse views. These views may not necessarily oppose each other, but they may be different enough to cause problems in defining clear objectives. Because the process assumes people will have different views, the goal is to achieve consensual action by moving towards understanding of the varying perceptions. Hence, the necessity for practitioners of system thinking to be open to other people's ideas for the process to be successful.

1.6 JUSTIFICATION FOR THE STUDY

The public sector in South Africa has had vast exposure to the rapidly changing demands of the external environment since the 1994 elections. The NDPW, similar to all other public institutions, operate in an environment in which there is less market exposure than in the case of private organisations. Public institutions obtain their funds for providing products and / or services from budget grants. The receivers of these services pay for the services by means of taxes without any direct reference to the specific service and / or product provided. Van der Walt and Knipe (1998: 9) argue that the decreased market exposure of public institutions has various consequences: there is less incentive for cost-cutting, operational effectiveness and efficient performance; budget allocations are inadequate and measured according to revealed client preferences and with regard to the equalisation of supply and demand; funds are allocated based on their intentions, rather than how successfully they achieve their objectives, and certain public institutions ignore the interests and demands of their clients who do in fact pay for products and services through tax.

To be more responsive to the constant changes in their environment, project service providers such as the NDPW must learn and change to become project-competent organisations. Garvin (1996 cited by Shaw, 2009: 32) argues that organisations learn through five main activities: systematically solving problems, experimenting with new approaches; learning from their own experience and past history; learning from the experiences and best practices of others, and transferring knowledge quickly and efficiently throughout the organisation. Shaw (2009: 32) also states that non-profit organisation that employs these activities is constantly looking for the root cause of problems; trying new ways to solve those problems; informing others about what was learned from these experiments, and using this learning to improve. It is apparent that the NDPW has not learned and changed adequately to become more effective and efficient service provider.

The inefficiency and ineffectiveness of the NDPW has been present for a long time. As all previous attempts have failed to improve service delivery, in particular project implementation, the current situation requires a fresh approach to resolve the problems.

In order to produce a framework for systems modelling, it is necessary to determine the importance of the various individual factors, variables and role players, their interrelationships with one another and their effect on organisational effectiveness to achieve project success. Improvement of organisational effectiveness and efficiency will only materialise when role players are able to locate and address the most influential factors amongst all the factors, while taking the effect of the 'not so important' factors into account. The current low efficiency levels within the NDPW are not the effect of a single factor or variable, but sets of variables and factors that interact with each other. Such complexity requires a holistic system thinking approach to this study to understand both the individual factors and their interaction. The NDPW's present situation is illustrated in the Rich Picture (Appendix A).

The success or failure of a project is thus not the effect of a single variable, or factor, but a set of variables interacting with each other to produce the final result that are evident from the following:

1.6.1 CURRENT IMPEDIMENTS WITHIN THE CONSTRUCTION INDUSTRY

In spite of all endeavours by the government and the construction industry to improve service delivery there are serious concerns within the South African construction industry with regard to

the high rate of organisational failure and the potential consequences of that on the industry's ability to meet the demand while delivering quality, value for money products and services while adding value. According to the cidb (2006: 2-8), Lesele (2006: 10-22), the Republic of South Africa (2009: 3-5), the Republic of South Africa (2010b: 18-19), the Republic of South Africa (2012a: 2-5) and the Republic of South Africa (2012b: 1-2) the high failure rate, *inter alia*, is attributed to the following impediments / constraints:

- Public sector capacity and capability limitations, both financial and human at local, provincial and national levels;
- The role of legislation and the vast number of Acts and legislation that impact directly or indirectly on the construction industry as well as the co-ordination and regulation thereof;
- The perceived marginal levels of success achieved and contributions made to the construction industry to date by the Construction Industry Development Board (cidb), the Council for the Built Environment, and the Construction Education and Training Authority (CETA);
- The marginal successes that emanated from the Expanded Public Works Programme (EPWP) and the Emerging Contractor Development Programme (ECDP) of the government;
- Government's inability to spend their allocated budgets for infrastructure developments, housing and other types of accommodation;
- The significant number of government policy documents that must be adhered to culminates into poor policy integration;
- The impact of HIV and AIDS on the construction industry;
- Poor management and management expertise in both the public and private sectors, especially amongst emerging contractors;
- Low productivity levels throughout the industry;
- High cost increases manifesting within the industry;
- Shortage of suitably qualified labour;
- Declining capacity of the professional sector within the construction industry and decreasing number of new entrants;
- Vast increased project failures due to poor performance of role players in the form of project sponsors, developers, PMs, consultants, contractors, and suppliers, financial institutions leading to cost, time, and quality slippages; poor management and planning throughout all the project phases from conception to project closure, lack of knowledge; high accident rates; rework; insensitivity to environmental impacts of the project; lack of or ineffective performance assessments, project monitoring and evaluation; not heeding to

lessons learnt that mainly emanate from poor leadership, quality management, and lack of integration of the design and construction process;

- Unethical behaviour such as bribery, fraud, corruption, collusive tendering, unfair practices, conflict of interest, and even professional negligence within the construction industry throughout the various sectors, and
- Poor rate of technological and skills transfer within the construction industry.

1.6.2 SIGNIFICANT PRIOR RESEARCH

The NDPW is chartered to provide services and accommodation to both internal and external clients. The slow, but steady loss of internal expertise over the last 15 years is really a leading indicator of what may be coming down the road. Several factors leading to the current poor performance levels and reduction in knowledgeable personnel include:

- Inability to capture key business pursuits. Win-win proposals are not achieved because of the lack of top management commitment and poor discipline throughout the organisation, particularly in head office;
- Too much reliance on a traditional client base which is losing faith in the NDPW's abilities fulfil its mandate to render suitable accommodation and infrastructure;
- Lack of will to follow through and to be proactive, and
- Too many conflicting leadership initiatives.

The researcher's prior research conducted in 2003 within the NDPW for a completed Masters study (Greyling, 2003: 115-141) highlighted various disturbing facts:

- There is disparity among the NDPW employees and their clients of what project success entails;
- Most of the respondents perceived project success to be in the narrower traditional context of cost, time, and quality and nothing more;
- Project management success and product success are related, but project management success does not ensure product success;
- The nine most common causes of project failure within the NDPW are:
 - Lack of clear project objectives;
 - Default by contractors in terms of cash flows, capabilities, experience and knowledge;
 - Insufficient client involvement during project formulation and implementation;
 - Improper planning or the lack thereof by the consultant team;

- Unrealistic timeframes, expectations, and cost estimates;
 - Insufficient and inappropriate project team skills;
 - Poor project management;
 - Lengthy internal processes for approving scope changes, and
 - Lack of, or inadequate organisational participation and support to the PMs.
- The most common barriers to project team effectiveness were ranked as:
 - Poor communication;
 - Lack of commitment;
 - Unclear project goals and objectives, and
 - Poor leadership.
 - The maturity level of the NDPW as project implementing organisation was found to be level 2 on a scale from 1 to 5 where 5 is the highest level of maturity, although some elements of higher levels are present, based on the maturity models of Kerzner (2001: 1046), and Rad and Levin (2002: 107);
 - Organisationally, the NDPW does not heed to lessons learnt, and there is very little knowledge sharing and management within the organisation;
 - Lack of policy and procedure integration, and
 - The client themselves do not know what their needs are.

Threats from one of the NDPW's largest clients, the South African Police Services (SAPS) in 2003 to make use of an alternative service provider or render the NDPW's functions themselves became a reality in 2006. SAPS is now in the process of taking over all the maintenance and construction functions of their portfolio and more and more properties are now being devolved to the SAPS in the year 2012. More clients are now also threatening to follow suite.

Furthermore, the Zimizele status quo report (Lesele, 2006: 10-22) sketches the same dismal picture where some of the non-complimentary comments from clients included remarks such as:

- "DPW is the please wait department"
- "They are not reliable in keeping promises and giving feedback"
- "I do not even know who is the Key Account Manager from the NDPW is"
- "The help desk of the NDPW is not satisfactory"
- "More involvement of staff is required to deliver a better and professional service to its clients", and
- "No client relationship, must definitely improve."

and some suggestions from clients included:

- “Allocate jobs to competent contractors”
- “Reduce feedback time”
- “Reduce time taken to attend to client needs”
- “Change departmental policy if it is negatively influencing performance”
- “Be more proactive”, and
- “Clients must be satisfied.”

The bottom line is that there is consistent under performance in service delivery, and client expectations are not being met. A third of the NDPW clients want to make use of other service providers, while 28% are still undecided and only 38% want to continue using the NDPW as their preferred implementing agent.

The contractors’ survey highlighted the following:

- The NDPW’s PMs need capacity building in terms of how to manage projects and on-site expectations;
- There is a need to establish the required number of PMs to effectively manage the project volumes;
- Emerging contractors must be trained to interpret the scope of work;
- PMs need to be more visible on site;
- The process of approving variation orders must be refined to minimise delays;
- The project specification must match the contractor’s capacity, and
- Payments are delayed for various reasons.

The following comments emanated from the consultant surveys:

- The NDPW PMs need to be capacitated and trained;
- Transparency is required relative to the selection of consultants;
- Consultants’ expertise needs to match project complexity;
- Finalisation of final accounts needs to be simplified - takes too long;
- Variation orders must be minimised;
- Contractor capacity must match the contract type and magnitude;
- The roles and responsibilities of the project team members need to be clearly defined, and
- The project team must have a clear understanding of the client’s needs.

It is thus evident that the NDPW has serious problems that will have to be resolved soonest to retain their clients to warrant their existence. Attaining the annual 100% expenditure is clearly not enough, thus raising the question of whether all the intended objectives have been met while spending the allocated budget.

Drucker (2004: 81) maintains that non-profit organisations tend not to give priority to performance and results. Yet performance and results are very important and far more difficult to measure and control within non-profit organisations. Van der Walt and Knipe (1998: 12) state that it is difficult, if not impossible, for managers of public institutions to set out the overall mission, aims and objectives of their institution, since they are not comprehensive and measurable, similar to increased profit. Measuring effectiveness in achieving mission, aims and objectives is not easy either, since many and various interest groups are or should be involved in evaluating performance.

In today's highly competitive and fast-paced environment, the rapid creation and delivery of high quality products and services is critical to business survival. Comninos and Frigenti (2008: 1) state that project management has become the new general management practice through which organisations respond to change, to develop and exploit markets ahead of their competitors, and hence project management is a skill that all managers need in their portfolio with the more traditional disciplines, traits and competencies. Organisations are forced to focus their energies on being highly innovative in delivering products and services involving greater technical complexity and requiring a greater diversity of skills. Moreover, this must be done with leaner organisations and tighter budgets while maintaining the highest quality standards. Comninos and Frigenti (2008: 2) argue that project management, needs to become part of the business and, in order to achieve that, organisations need to come to terms with the business of project management.

Implementing project management into formerly functional organisations, i.e. transforming such organisations into project driven organisations such as the NDPW is a complex process, requiring strategic management interventions. Project management represents a departure from traditional management and that to most people project management represents major change. Comninos and Frigenti (2008: 3) state that a business focused project management approach can bridge this gap between strategy and detail action plans as project management must be equally at home in the boardroom, where projects are often initiated to deliver strategy, as it is on projects itself, where the work is done to realise strategic and business objectives. Implementing project management in an organisation is a project in itself.

According to Delavigne and Robertson (1994: 141), there is nothing more difficult to plan, more doubtful of success, nor more treacherous to manage than the creation of a new system. Change may be regarded as a planned action, but is more often an unplanned reaction to stimuli in the environment. Various factors such as technological, economic, political, legal and labour developments, may force institutions to change. According to Felkins *et al.* (1993: 9), change begins with recognition of contradictions between intentions and actions. They also maintain that “most problems are not in individual people, but in the interrelated system of people and resources of how these people relate to one another, gather information, and solve problems.”

There is currently a shortage of professionally registered, suitably qualified and experienced PMs within the NDPW in spite of the current environment where unemployment is high within South Africa. Coram (2012: 01) advocates that the project management office (PMO) / project support offices (PSOs) are constructs that organisations can use to engage the experienced PMs more easily and more broadly, and the same time provide suitable on-the-job training to the less experienced PMs thereby expanding the body of project management knowledge within the organisation.

A fully developed project PMO or PSO within project organisations, according to Coran (2012: 2), has the capacity to provide services and organisational focus in the core and supporting areas of project management. The PMO / PSO’s mission and objectives are met by training, consulting and mentoring the project-related personnel, augmenting the project teams and by serving as a ‘clearing-house’ for project management best practices and promoting communication throughout the organisation, within regional offices and nationwide. An important function of the PMO / PSOs, according to Coran (2012: 2), is to heighten the organisational awareness of the importance of integrating project management procedures and project management culture into the organisation. Coran also believes that project management challenges and the potential for the PMO / PSOs to contribute to organisational success will continue to grow.

In developing a business focus for projects, according to Comminos and Frigenti (2008: 3), organisations must consider a wide range of issues and follow a process that enables the correct projects to be undertaken in support of organisation strategy. These issues include:

- Upper management support for project management;
- Cross-functional interface with the implementation of projects;

- Proper project selection and prioritisation;
- Portfolio management;
- Upper management interface with PMs and support staff;
- Establishing the PSO;
- Sound PM career paths, and
- Promoting the ethos of a learning organisation.

Comninos and Frigenti (2008: 4) argue that organisations that do not adequately address these issues or do not formalise the linkages between strategies and projects find that projects seem to pop up across the organisation in an uncontrolled manner. This results in confusion and resultant failure to achieve the desired project results. Confusion and failure then arises from:

- A lack of clarity as to how projects align and link to the organisation's strategy;
- The apparent absence of proper business processes for implementing projects;
- Project priorities constantly changing, and
- Upper management's apparent lack of awareness of the number, scope and complexities of the projects being undertaken.

The arising confusion and project failure rate results in:

- Project participants feeling that they are working not only on many unnecessary projects, but also at cross-purposes with other areas of the business;
- Projects being seen as bottomless holes into which money and people disappear and from which, with a bit of luck, something may emerge;
- Organisations attempting too many projects outside of their capacity and capability;
- A general weariness with projects and a lack of motivation to complete them - project fatigue;
- A misunderstanding of urgency versus priority;
- Doing the wrong things, right instead of doing the right things, right, and
- Doing less with more rather than doing more with less.

Comninos and Frigenti (2008: 5) advocate that by linking projects and strategy gives projects a strategic and business focus that goes a long way toward resolving many of these problems. Combining a strategic focus with a business process for implementing, selecting and prioritising projects is an important step in creating an environment for successful projects. Dinsmore (1996 cited by Comninos and Frigenti, 2008: 5) describes this philosophy as “managing organisations by projects is an organisational mind set. It is a way of thinking about business. It means the

organisation is project-driven, that corporate goals are targeted and achieved by managing a web of simultaneous projects, including operational improvement and organisational transformation programs as well as traditional development projects.” He adds that organisations, such as the NDPW are portfolios of projects of which the aggregate result of an organisation’s projects becomes the organisation’s bottom line. Mission, visions, strategies, objectives, and goals are transformed into organisation-wide programs that translate corporate intentions into actions. These programs are, in turn broken into projects to be managed by corporate staff or professional project management personnel.

1.6.3 DISPARITY IN JUDGING PROJECT SUCCESS OR FAILURE

Siguroarson (2009: 14) argues that project success should not only be assessed in terms of cost, scope, time, and quality, but should be assessed in terms of multidimensional critical success factors that should be divided in four primary categories:

- Internal project objectives - efficiency in implementing the project;
- Benefit to the client - effectiveness in the short term;
- Current contribution - in the medium term, and
- Future opportunities - in the long term.

This raises the following questions that must be considered when assessing the level of project success:

- Where did the targets come from? Were the targets realistic and achievable?
- Should failing to meet one or all of the targets be considered a failure if the end product is a major success?
- At what ‘additional’ cost were the targets met?
- Were there clear project objectives and criteria to measure the extent of success?
- Whose perception counts, the project team, the client or the end user of the facility or product?
- Even if all the targets were met, can the project still be considered to be a success? What about the other objectives?
- Does the project solve the problem it was intended to solve and to what extent did the project add value, i.e. product success?
- When referring to project success does that include both Project Management and Product success? At what stage should the successfulness of a project be assessed, at handover, after 6 months, 3 or 5 years?

- To what extent does the performance of the project team and achievement of the intended scope influence the assessment of project success?
- Based on the outcome of the project, will the client make use of our services in the future?

Rad and Levin (2002: 9) emphasise the importance of clarifying what is or what will be regarded a successful project before implementing the project. On some occasions the project team may consider the project to be a success while the client pronounces it to be a failure or *vice versa*. This disparity in judgment as to the success or failure might also exist amongst team members and the clients' end users. The perception of project success or failure is often based on unspoken and personal indices, which is why two different people, usually with different experiences and values, may assess the success of the same project differently. There is then a need for a set of performance indices to formalise the project evaluation process.

1.6.4 THE TRIPLE BOTTOM LINE AND TOTAL RESPONSIBILITY MANAGEMENT

The triple bottom line (TBL) is a vehicle designed to progress the objectives of sustainable development and service delivery for that matter in the NDPW's context. Because sustainability within the construction industry involves the simultaneous pursuit of economic prosperity, environment quality and social equity, organisations that aim for sustainability need to perform not only against a single bottom line, but against the triple bottom line of social, environmental and economic impacts. Hence, it stands to reason that any organisation, which is not socially or environmentally sustainable, is unlikely to be financially sustainable in the long term. The triple bottom line can be viewed as both a reporting device e.g. information presented in quarterly or annual reports, and / or an approach to decision making e.g. the use of decision making and reporting tools to present the economic, environmental and social implications of decisions. It is consequently an absolute necessity to integrate the TBL into corporate planning.

Waddock and Bodwell (2007: 113), and Gorenak (2009: 1) argue that in order to cope with the ever increasing demand for better quality service and its complexities, a set of interdependent managerial practices that are parallel to total quality management (TQM) called total responsibility management (TRM), is emerging. TRM has three elements to its approach: inspiration, or the vision-setting and leadership systems; integration of responsibility management into strategies, as well as employee and other operating practices, and innovation and improvement, including performance assessment and measures, and learning systems. TRM approaches are systematic efforts to manage an organisation's relationships with its key

stakeholders and the natural environment. From this perspective, managing responsibility means building trusting relationships with key stakeholders, such as employees, clients, suppliers and communities, and ensuring that despite the power differences that may exist the organisation's impacts are rather positive than negative. Waddock and Bodwell (2007: 116) adds that the TRM approach represent integrated systems to address responsibility and help organisations to maximise success by: continually monitoring and improving performance through engaged and mutually responsive relationships with employees and other stakeholders; measuring performance in relation to the triple bottom line attributes, and transparently accepting responsibility and accountability for the impacts of corporate decisions, actions and results.

Responsibility management, as with quality management according to Gorenak (2009: 3), is not necessarily about perfection, but rather about a process of continual improvement and innovation. As with quality management, improving the organisation's responsibility management means involving and engaging with key stakeholders, particularly with employees. By engaging with them interactively, organisations can develop improvement and learning systems that help them generate better returns and greater competitive advantage.

1.7 PROBLEM STATEMENT

The problem statement is succinctly presented as: The NDPW underspends on a continuous basis to the detriment of their clients and the general public as the end users. Its projects are constantly late, substantially over budget, fail to fulfil clients' needs and expectations, and / or fail to meet socio economic objectives of the government.

The NDPW, that is comparable to other government project implementing agencies, implemented project management in 1995 to facilitate appointing consultants from the private sector to speed up service delivery, increase quality and client satisfaction. The preferential procurement system is viewed to be not that successful either, and was seen as enrichment schemes and not development tools. Ineffective internal processes and the appointment of consultants do not achieve the required result of improved service delivery mainly due to cost, time, and quality slippages, resulting in severe client dissatisfaction.

1.7.1 MAIN PROBLEM

Inefficient internal structures, processes and lack of inter-divisional support within the NDPW, default by the client, PMs, consultants and contractors cause further slippages, which increases client dissatisfaction. These imbalances hamper the NDPW's mission to reduce the maintenance

backlog, ensure client satisfaction, and attain their social responsibility of increased job creation and skills transfer, i.e. a situation where project success is currently not the norm that is contrary to Kerzner's (2009: 7) definition of project success where a project is:

- Within the allocated time period;
- Within the budgeted cost;
- At the proper specification level;
- With acceptance by the client;
- When a service provider can use the client's name as reference;
- With minimum or mutually agreed upon scope changes;
- Without disturbing the main work flow of the organisation, and
- Without changing the corporate culture.

Considering the present service delivery levels of the NDPW and the current threat of their services being outsourced has led to this research in which the researcher will address the following fundamental question:

Will a systems approach to project implementation in the public sector improve service delivery and increase project success rates?

The use of system thinking as the nucleus of the multi-methodological approach to this research is to assist in ascertaining the primary cause(s) of the problem situation and to clarify the process of project implementation as a sub-system within the greater system of the construction industry.

1.7.2 SUB-PROBLEMS

In order to develop a research strategy to address the main problem the following related sub-problems have been identified:

S-P1: To what degree do clients contribute to project success or failure?

- Does the client fully understand the legislated procurement process?
- What is the capacity of the client's representatives?
- Do the clients know what their actual needs are?
- How thorough is the client's brief?
- To what extent do the clients' capacity problems affect the outcome of the project?

- Does the project team fully comprehend the client's needs, stated and non-stated as well as their expectations?

S-P2: Are project objectives clearly defined for assessing the level of project success?

- Who decides on what the project objectives should be?
- Were the project objectives realistic, achievable and measurable?
- Were the project objectives agreed upon and at what stage?
- Is there total buy-in from the client with regards to the NDPW's social objectives?
- Should project success be defined as having only achieved the project objectives of cost, time, and quality?
- Which should be given preference, project management success, product success or both?
- What are the major causes of delays and their frequency of occurrence?
- At what stages should the level of project success be assessed?

S-P3: Are project briefings adequate to limit changes to cost, scope, time, and quality?

- Are all the critical elements of the project brief addressed adequately?
- To what extent does the project brief change from inception to project close-out?
- What are the implications of a poor project brief?
- To what extent must the NDPW project briefings be improved?

S-P4: Do the PMs' capabilities match the actual post requirements?

- Is it only the PMs or the project implementation methodology as a whole which fails?
- Is the cause of failure system based or people based or a combination of both?
- Is the project implementation methodology being monitored, evaluated and adapted to ensure continuous improvement?
- What strategies and best practices should be adopted to capacitate PMs within the NDPW?
- What strategies and best practices should be adopted to improve project implementation - capacitate all role players within the supply chain of project implementation of the NDPW?
- Are performance reviews of PMs adequate?

S-P5: Has the NDPW adopted project management as a corporate methodology?

- Does everyone within the project implementation cycle understand the concepts of Project Management?
- What is the level of organisational readiness for project implementation?
- What is the NDPW's level of organisational readiness and maturity?
- Is the NDPW a project competent organisation?

S-P6: How often are PMs mismatched to projects and what are the consequences?

- Are PMs mismatched?
- What are the implications of mismatching PMs?
- What are the challenges facing mismatched PMs

S-P7 Will cidb registration of contractors ensure improved performance and increase the current project success rates?

- In which manner are contractors assessed?
- What are the potential benefits to the client using cidb registered contractors?
- Does the cidb registration guarantee performance?
- What strategies and best practices should be adopted to improve the development of emerging contractors?

S-P8: To what extent are projects being monitored, reviewed and evaluated effectively to induce organisational learning?

- What criteria are used?
- At which intervals are projects monitored and evaluated?
- What should be monitored, reviewed and evaluated?
- Should it be formal or informal?
- What is done when there is a deviation between planned – actual progress?
- To what extent is the client involved in the monitoring, review and evaluation of projects?
- Are lessons learnt heeded to by both the NDPW and their clients?

S-P9: Will project success rates improve by establishing PSOs within the regional offices thereby assist the NDPW to become a project competent organisation?

- Why PSOs?
- Will the PSOs facilitate organisational learning and continuous improvement?

- Can the PSOs facilitate the instilment of system thinking in the project implementation process?
- In what manner will the PSOs improve the NDPW's organisational readiness for project implementation?
- What impact does the non-existence of a fully-fledged professional services component have on service delivery?
- Who drives the process of continuous improvement of systems and procedures and are they effective?

If an entire organisation can institutionalise the factors that lead to both project and project management success, the entire organisation should be able to achieve successes in meeting client demands consistently.

1.7.3 HYPOTHESES

The following constitute relevant hypotheses:

- H1: Clients play a major role in achieving project success or failure;
- H2: Project objectives are not clearly defined at the project inception stage;
- H3: Project briefings are inadequate;
- H4: PMs' capabilities do not match the actual post requirements;
- H5: The NDPW has not adopted project management as the corporate methodology and cannot be considered to be a project competent organisation;
- H6: PMs are being mismatched to projects with negative impacts on project success and client satisfaction;
- H7: cidb registration of contractors will not ensure improved performance and increase project success rates;
- H8: Projects and the NDPW as an organisation are not assessed, monitored, reviewed and evaluated effectively to induce organisational learning, and
- H9: Establishing PSOs within the regional offices will improve project success rates thus also service delivery.

1.8 RESEARCH OBJECTIVES

The main objective of this study is to explore and gain insight as to how the NDPW can improve service delivery through a more efficient project implementation methodology by identifying

enablers, barriers and precursors to the improvement of service delivery and ultimately formulating a framework for evaluating projects from a system thinking perspective as a platform for constructive knowledge acquisition and generating information that could be used for future decision-making and strategic planning.

Project evaluation will also affirm limitations and highlight areas within the project implementation process that must be improved. Organisational competencies would then improve by learning from the past successes and failures. It will also provide a means to compare current practices with the project management organisation's original intent as well as an on-going vehicle for client feedback, which will increase transparency within the community it serves and restore trust in the South African government that will enable the fulfilment of its objective to create an enabling environment for reconstruction, growth and development in the construction industry of South Africa thereby alleviating poverty and inequalities in society.

The first sub-objective is to understand project management, the role of all the stakeholders and the project implementation cycle within the NDPW from a systems perspective to facilitate conceptual understanding of project implementation within the NDPW.

The second sub-objective is to design a framework that models specific system thinking methodologies and archetypes that would improve project implementation within the NDPW through the establishment of project support offices within the regional offices.

The third sub-objective is to develop a framework for evaluating projects that would ultimately institutionalise project management methodologies as the corporate methodology, which will cultivate a situation where project success is the norm and consequently, enable project management organisations and in particular the NDPW, to retain their clients, contractors and other service providers. From this, benchmarking projects could serve as a guide of improved performance to others within the organisation and construction industry.

1.9 DEFINITION OF CONCEPTS

1.9.1 PROJECT MANAGEMENT

Project management, according to Burke (2007b: 18), and Kerzner (2009: 2-3), is the process of integrating everything that needs to be done as the project evolves through its life cycle in order to meet the project's objectives that must be completed within certain specifications, time and

resource limitations. The project management institute (2010: 1) defines the following project concepts as follows:

- “Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements that are accomplished through the use of processes such as initiating, planning, monitoring, executing, controlling, and closing.” The PM has a responsibility to the stakeholders and must ensure that their expectations have been met upon completion of the project;
- “Program management is the centralised coordinated management of a programme to achieve the program’s strategic objectives and benefits. It involves aligning multiple projects to achieve the programme goals and allows for optimised or integrated cost, schedule and effort.”, and
- “Portfolio management is the coordinated management of portfolio components to achieve specific organisational objectives.”

1.9.2 PROJECT MANAGEMENT KNOWLEDGE AREAS

The project management area of knowledge, describes project management knowledge and practice in terms of their component processes. These processes as defined by the project management institute (PMI) (2010: 7) include nine project management knowledge areas: project integration; scope; time; cost; quality; human resources; communications; risk, and procurement management.

1.9.3 PROJECT-COMPETENT ORGANISATION

A project-competent organisation, according to Söderlund (2005: 457), is about developing and sustaining and building project competence within the organisation. Project competence must be viewed in the light of the complexity of the project portfolio of the organisation. Söderlund (2005: 458) believes that developing project competencies is also a matter of fostering management of different project types and transferring lessons learned between these project types whereby the organisation that supports their workers in carrying out their jobs as effectively as possible. This is achieved by creating an environment within the organisation that encourages collaboration, by supplying their workers with the resources necessary to operate effectively and by sustaining an infrastructure that offers their employees the necessary information and supporting internal services to do their jobs properly.

1.9.4 ORGANISATIONAL READINESS FOR PROJECTISATION

Lewis (2007: 352-354) maintains that for an organisation to become a world-class project management organisation, readiness for projectisation is when the prevailing circumstances within the organisation include:

- Total management support for an organisation wide project management methodology;
- Project management methodology is widely understood and the corporate environment fully supports the current project management practices;
- Problem resolution and change management are meeting both the role players' and management's expectations;
- There is an overall understanding of project management practices by the PMs, specifically towards project definition, planning, control and closing phases of the project;
- All clients' needs and expectations are met due to business awareness and competencies of staff, and
- There are excellent interpersonal skills amongst staff and divisions within the organisation.

1.9.5 PROJECT EVALUATION

Lewis (2007: 182) refers to a dictionary definition of evaluation which is "to evaluate a project is to determine if the overall status of the work is acceptable, in terms of the intended value to the client once a job is finished." The ADA (2009: 4) defines project evaluation as: "The systematic and objective assessment of an on-going or completed project or programme, its design, implementation and results. The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact and sustainability." Lewis (2007: 182) also states that project evaluation appraises the progress and performance of the job compared with what was originally planned. In order for evaluation to be effective, there must be an effective project control system, as evaluation cannot be effective unless proper control methods are first employed.

1.9.6 KEY ACCOUNT MANAGEMENT

The key account manager (KAM), previously referred to as client liaison officer, in the context of the NDPW is responsible for individualised, responsive, comprehensive service to his / her designated client to assist in meeting the client's needs while managing the overall client

relationship to maximise client satisfaction. The KAM establishes and maintains direct relationships with key client personnel and to other internal divisions within the NDPW.

1.9.7 QUALITY ASSURANCE VERSUS QUALITY CONTROL

Glazer (2012: 1) distinguishes between quality assurance (QA) and quality control (QC) where the difference is that QA is process oriented and QC is product oriented. Quality assurance, according to Glazer (2012: 1), makes sure the right things are being done the right way. A process / effort that ensures that processes are followed, that the processes facilitates doing the right things, the right way, and when they fail to be used or fail to perform as expected there is a way to correct, adjust, or escalate the matter until it is resolved to everyone's satisfaction. QA does not assure quality. Rather, it assures that a process is being followed, and if it is a good process, will increase the probability that there is a quality result. It will, presumably, make sure that requirements are communicated, traced, planned for and scheduled.

The QA role will also collect data that can be used for process improvement. Kerzner and Saladis (2009: 397) add that: "QA is the application of the process and systematic quality activities that will ensure project success and the achievement of project requirements. The auditing of quality requirements and results to ensure appropriate levels of quality are being achieved or are meeting the specified standards." This is the area, according to Kerzner (2001: 1098), where the PM can have the greatest impact on the quality of the project by ensuring that the project cost, scope, and time functions as well as any other objectives are fully integrated into the projects.

Quality control on the other hand, according to Glazer (2012: 1), makes sure the results of what was done are what was expected or planned. QC must also cover the 'human' part of the process. QC is the process of examining the output for minimum levels of quality in some dimension. Kerzner and Saladis (2009: 397) interpret QC to be "the monitoring and recording the project results to determine compliance with established and agreed upon requirements and assess performance. Quality control also includes recommendations for change quality related issues."

Glazer (2012: 2) adds that "the 'process' can be corrected, but if the organisation employ and retain people who: do not understand; are not skilled; are not trained; are misinformed, or could not care less, then until the human element is corrected, the process will never be executed as expected."

1.9.8 CORPORATE CITIZENSHIP

The primary focus of our corporate citizenship activities, according to Arifi *et al.* (2011: 1), is on developing initiatives to address specific societal issues, such as the environment, community economic development, education, health, literacy, language and culture.

Logan *et al.* (1997 cited by Arifi *et al.*, 2011: 06) argue that “at a minimum, corporate citizenship means adherence to laws, regulations, and accepted business practices in the places where an organisation operates. A more expansive interpretation is the conduct of business in ways that reflect proactive, responsible behaviour in business and in dealings with all constituents and with respect to communities, society, and natural environment more generally.” Corporate citizenship, according to Matten and Crane (2005), “...describes the role of the corporation in administering citizenship rights for individuals. Such a definition reframes corporate citizenship away from the notion that the corporation is a citizen in itself as individuals are, and towards the acknowledgement that the corporation administers certain aspects of citizenship for those individuals. It is not suggested suggest that corporations are the only actors administering these rights, but they have taken over considerable responsibility for such administration from governments.”

According to Waddock (2003: 3), corporate citizenship means developing mutually beneficial, interactive and trusting relationships between the organisation and its many stakeholders that include employees, clients, service providers and communities, through the implementation of organisational strategies and operating practices. In this sense, being a good corporate citizen means treating the entire organisation’s stakeholders with dignity and respect, being aware of the organisation’s impacts on the stakeholders and working collaboratively to achieve mutually desired results.

Assessment of corporate citizenship is based on the perceived level of corporate responsibility an organisation exhibits, which inherently involves accountability to the relevant stakeholders for their actions that are evident from an organisation’s actions, impacts and practices. Waddock (2003: 3) maintains that good corporate citizenship is fundamentally about respect for all the stakeholders and integrity both internally and externally.

In essence, corporate citizenship refers to an organisation’s proactive, responsible and ethical engagement with their communities to build financial success, environmental sustainability and

social capital. An essential part of socially responsible business is the organisation's responsibility to inform society of its social and environmental impacts and any changes in performance through reports, publications or other communications.

Public managers need to ask themselves constantly; how do their decisions affect sustainability and what are the implications for the communities to which they are accountable? To operate sustainably, an organisation must act in a way that is consistent with, and supportive of, the survival of the physical environment and also the communities and economies in which it operates.

1.9.9 CORPORATE GOVERNANCE AND ACCOUNTABILITY

Corporate governance, according to Armstrong (2002: 1), "is about leadership; leadership for efficiency, for probity and for responsibility while being both transparent and accountable." Cadbury (2002: 2) suggests that corporate governance is concerned with maintaining the balance between economic and social goals and between individual and communal goals. The aim is to align the interests of individuals, organisations and society as close as possible.

Raynard (2002: 3) maintains that organisations need to develop and manage its systems of governance that facilitate:

- The identification of stakeholders with legitimate interest in the organisation's activities;
- Stakeholder voices being heard and taken into account, at the right place and time within the organisation, without compromising the organisation's ability to make effective decisions;
- The allocation and acceptance of responsibility to manage relationships with different stakeholder groups;
- A continuous cycle of improvement based on stakeholder engagement;
- The building of trust between the organisation and its stakeholders, and
- The empowerment of stakeholders to engage effectively with the organisation.

Accountability, according to Raynard (2002: 4), is "to explain or justify the acts and omissions, risks and dependencies for which role players are responsible to people with a legitimate interest. In addition to the requirement of transparency, accountability also entails a broader obligation of responsiveness and compliance."

Raynard (2002: 4) also adds that the guiding principle in the development of an inclusive and socially responsible system of governance is accountability and that every aspect of the system must be tested in terms of whether the particular procedure, rule or other process helps or hinders the organisation's ability to account for its activities and to improve its performance. It can thus be regarded as a process of learning facilitated by the leadership of the organisation and its engagement with stakeholders.

Dunović (2010: 145-147) distinguishes between the different types of governance within a project organisations:

- Corporate governance consists of the set of processes, customs, policies, laws and institutions affecting the way people directly administer or control an organisation. It also includes the relationships among the many the stakeholders involved and the corporate goals;
- Governance in terms of programme management comprises functions, processes and procedures defining how to prepare, manage and control the programme. Managing successful programmes also defines governance as a control framework through which a programme delivers its change objectives and remains within corporate visibility and control. The role of programme governance is to ensure that the resources of the organisation are utilised in line with other activities. The main elements of programme governance are leadership and organisational structure, processes which ensure that a programme supports and develops its strategy and organisational goals. They form an overall control mechanism and the backdrop for all management activities, and
- Project governance as a framework for decision making is the process of making decisions, establishing models or structures for their enablement. The main focus of effective project governance is the elimination of project failure by doing projects right and doing them right time after time.

1.10 DELIMITATIONS OF THE RESEARCH

The purpose of delimiting the research is firstly to make the research topic more manageable and secondly to allow the reader to grasp the magnitude of the problem. The omission of certain topics or respondents does not imply that there is no need for their consideration or research.

1.10.1 GEOGRAPHIC DELIMITATION

The area of research shall be limited to nine regional offices including the head office of the NDPW of South Africa although comparisons will be made with the project implementation processes within the Provincial Public Works Departments and similar government implementing agencies of South Africa, as well as other international Public Works Departments which will be correlated to literature sources.

1.10.2 RESPONDENTS

The respondents include staff and management of the NDPW, all the NDPW clients, Coega and the Independent Development Trust (IDT) government project implementing agencies, all professional bodies and role players within the construction industry, the public sector and the private sector. The respondents will also include key account managers, occupational health and safety consultants and officers, and both established and emerging contractors.

1.11 SIGNIFICANCE OF THIS RESEARCH

This research focuses on real organisational problems of which the outcome will serve as a window of opportunity to address the related organisational limitations and deficiencies which will be used to generate a framework for improved project evaluation and ultimately improved project implementation within the NDPW. The findings of this research will be beneficial to the NDPW, the NDPW's clients, consultants and contractors, and in particular the construction industry of South Africa in general.

Other government project implementing agencies will also benefit as the developed frameworks and models could be replicated with minor adjustments, if any, as it is government's intention to standardise governmental procurement and project implementation processes. Specific benefits of this research include:

1.11.1 BENEFITS FOR CLIENTS:

- A thorough understanding of the project implementation process within the NDPW;
- Identification of the causes of client dissatisfaction;
- A clear understanding of the important role the client plays in achieving project success;

- Clearly formulated project objectives and joint assessment of the successfulness of the project;
- Improvement in the briefing process, and
- Improved client relations.

1.11.2 BENEFITS FOR CONSULTANTS:

- Comprehensive client briefing and understanding client needs;
- The appointed consultants' capabilities will match the complexity of the project;
- Improved project planning as there will be sufficient time to do proper planning and obtain approval of sketch plans well before the financial tender date;
- Less creep in cost, scope, time, quality, and H&S or any other set objectives, and
- Projects will be completed and closed out sooner.

1.11.3 BENEFITS FOR CONTRACTORS:

- Improved scope comprehensiveness emanating for proper briefing;
- Comprehensive bid documentation;
- Reduced cost, scope, time, and quality creep on projects emanating from proper planning;
- Reinstatement of construction standards to all projects, and
- Projects be completed and closed out sooner.

1.11.4 BENEFITS FOR THE NDPW:

- Complete understanding of the project implementation process and its current impediments;
- Total buy-in of project objectives from all stakeholders once formulated;
- Improved construction programme management and budget forecasting;
- Decreased project implementation lead time;
- Decreased project implementation cycle;
- PMs will be enabled and capacitated;
- Project will be allocated to suitably qualified and experienced PMs;
- Project management will become the corporate methodology resulting in increased organisational support to the PMs;
- Improved client relations and satisfaction;
- Greater innovation in business processes;
- Strengthened relations and ethical practices;
- Improved communication and use of knowledge;

- Retain clients and possible expansion into private sector;
- Improved corporate governance and corporate citizenship;
- Reduced gap between private sector and public sector practices;
- Increased action learning, knowledge management and – sharing;
- Identified tangible issues that will enable the NDPW to ensure sustainability;
- Identified leverage points for improving service delivery, and
- Elimination of adverse barriers within the project implementation processes of the NDPW.

1.11.5 BENEFITS FOR THE CONSTRUCTION INDUSTRY:

- Improved construction programmes will result in synchronised government expenditure;
- Improved control and forecasting of human and financial resources required for the industry;
- Satisfied clients and service providers will engender synergy within the industry itself;
- Increased BEE and development of emerging contractors;
- Improved skills transfer;
- Improved project implementation process;
- Achieving governmental socio economic objectives;
- Improved health and safety compliance on construction sites, and
- The NDPW project implementation practices aligned with the private sector.

A substantial contribution to scientific knowledge and deep insight into the subject matter will be facilitated by the exploratory nature of this research.

1.12 RESEARCH METHODOLOGY

This research explores the use of system thinking in a multi-methodological approach. Models and methodologies can be chosen in such a way that one of them be explicitly employed as dominant while another or others are being used in a support role. Current project management methodologies use a normative and reductionist approach based on models derived from hard system thinking and systems engineering. Haslett and Sankaran (2009: 11) argue that such approaches are insufficient when projects become more complex due to uncertainty and ambiguity, and that system methodologies could be very useful to extend the capability of PMs and project organisations to deal with the complex aspects of project implementation. Conventional project management methodologies often deal with implications of short-term focused management actions that could actually have a detrimental effect over a longer time.

The chosen models and / or methodologies is used creatively to understand the problem situation, define the root causes, choose, and implement courses of relevant, well-considered, astute action that addresses the core issues.

System thinking is used in this exploratory and descriptive research, as the dominant methodology supported by a number of methodological techniques; observations, archive data reviews, interviews, workshops, intervention meetings, a thorough literature review, and empirical data derived from questionnaires, to acquire insight into the present situation (Bless and Higson-Smith, 1995: 42 – 44; Lang, 2004: 105).

This research must be seen as a process of enquiry for understanding a social and human problem based on building a complex, holistic picture, formed with words, reporting detailed views of respondents conducted in a natural working environment. An advantage of applying system thinking to the study prior to embarking on action research is that it allowed for a thorough study to be done on the politics and culture within the organisation (Creswell, 1994: 1 – 2; Lang, 2004: 108). The choice of this approach is dictated by the nature of the problem. A thorough literature survey facilitates the understanding of the concepts of programme and project management, project success and failure, organisational learning that should take place to become a project-competent organisation, and project evaluation, its necessity and importance for the NDPW.

The system thinking methodology thus employed for developing system models that facilitate a better understanding of the problem holistically thereby generating more constructive and applicable recommendations and / or resolutions that could and / or must be implemented by the NDPW to improve project implementation and service delivery through improved organisational strategies, programme management and project management interventions.

1.13 ORGANISATION OF THE STUDY

The study unfolds in the following manner to provide a holistic view of the problem situation and simplifying interpretation of system modelling and recommendations made.

Chapter 1 constitutes the introduction to this study, the problem statements and its settings. Included within this chapter is also a brief overview of system thinking, its necessity within the project management environment and its benefits to service delivery organisations such as the

NDPW as well as a contextual background of the NDPW, the problem situation and the project implementation processes.

Chapter 2 elaborates on the current situation within the NDPW and expand on the rationale for a system thinking approach to project implementation. It also includes the review of the relevant literature regarding the concepts of a project management, project success and project failure and expounds the ground rules of what a project competent organisation entails as well as the expectations within the organisation of the various role-players. Chapter 2 also elaborates on the concepts of project monitoring and evaluation including the different concepts that would facilitate organisational learning and change, as well as the need for a project management office and a constructive project evaluation framework in a project-competent organisation.

Chapter 3 defines the research methodology, the design of the questionnaires, the collection of the data and analysis of the data as well as the manner in which the related issues to the problem statement and sub-problems were surfaced.

Chapter 4 focuses on the results and findings of the research questionnaire. Findings are illustrated by means of derived statements, tables and graphs. This chapter portrays the discussions of the test results in relation to the research objectives as well as testing the hypotheses.

Chapter 5 discusses the project management culture framework, the basis for the PSO model, illustrates the PSO interventions and PSO model. Chapter 5 also describes the project evaluation framework and its necessity and the organisational maturity model. The analysis of testing the PSO model and the project evaluation framework are also presented in this chapter.

Chapter 6 summarises and concludes the research findings, and also contains recommendations for improvement and future research.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The legislative mandate of the NDPW resides in the Constitution of the Republic of South Africa, 1996 Act No 108 of 1996. Furthermore, the department and all their national departmental client organisations are subject to the provisions of the Public Service Act, 1994, as amended, and the Public Finance Management Act, 1999, as amended, as well as the Public Service Regulations, 2001 and the Treasury Regulations, 2002, as amended (Republic of South Africa, 2003: 10).

As the custodians of all national government fixed assets the NDPW has the responsibility of providing suitable accommodation to all national government departments. Conversely, the inefficiency and ineffectiveness of the NDPW has been around for a long time, too long.

The current low efficiency levels within the NDPW are not the effect of a single factor or variable, but sets of factors and variables that interact with each other. Such complexities require a holistic system thinking approach to this study to understand both the individual factors and their interaction. To produce a framework for systems modelling, it is necessary to determine the importance of the various individual factors, variables and role players, their interrelationships with one another and their effect on organisational effectiveness to achieve project success. Improvement of organisational effectiveness and efficiency will only materialise when the most influential factors amongst all the factors are identified and addressed, while taking the effect of the 'not so important' factors into account. The current situation demands a fresh approach to resolve the problems within the project implementation processes as all previous attempts have failed to improve on project implementation and service delivery.

This chapter provides a contextual background of the NDPW and the problem situation in Section 2.2 as well as the relevant literature reviewed that constitute the theoretical framework of this study:

- Section 2.3: System thinking, a process of inquiry;
- Section 2.4: Overview of project management, organisational competencies and expectations;
- Section 2.5: Project success or failure;
- Section 2.6: Client expectations leading to client satisfaction;

- Section 2.7: Client contribution toward project success;
- Section 2.8: Organisational learning and change through project monitoring and evaluation;
- Section 2.9: Building a project competent organisation by deploying project management offices and project support offices, and
- Section 2.10: Effectiveness of the Construction Industry Development Board's (cidb) objectives.

2.2 CONTEXTUAL BACKGROUND OF THE NDPW

2.2.1 VISION, MISSION, VALUES, AIMS AND OBJECTIVES OF THE NDPW

The NDPW is committed to facilitating delivery by other departments by providing accommodation and property management services and meeting the objectives of poverty alleviation and transformation.

The NDPW's vision prior 2003 was to be a leader in Africa and the developing world in the provisioning and management of state property and the implementation of Public Works Programmes (Republic of South Africa, 2003: 2).

In 2006 the Department formulated the following new vision and mission statements to demonstrate the Department's and its employees' total commitment to Government's vision of a better life for all the country's citizens (Republic of South Africa, 2006: 11).

Vision: 'To be world-class Public Works Department'.

Mission: The NDPW aims to promote the government's objectives of economic development, good governance and rising living standards and prosperity by providing and managing the accommodation, infrastructure needs of national departments through the national Expanded Public Works Programme (EPWP) and transformation of the construction and property industries. In pursuance of this objective, the Department will endeavour to:

- Efficiently manage the asset life cycle of immovable assets under the Department's custodianship;
- Provide expert advice to all three spheres of the Government on immovable assets;

- Contribute to the national goals of job creation and poverty alleviation through programme management, leading and directing of public works programmes nationally, of which the EPWP forms an integral part, and
- Provide strategic leadership to the construction and property industries.

Values in portraying:

- Open communications. Regular, frank and open communications are encouraged within the NDPW, and with its external publics;
- Urgency - all tasks are attended to timely and diligently;
- Commitment - all employees demonstrate unwavering dedication to their work and perform tasks purposefully within available resources;
- Integrity - the NDPW rejects any form of corruption and / or maladministration and all employees vow to expose any actions undermining principles of good corporate governance;
- Decisiveness - no time is wasted nor resources spared to expedite decision making and effect problem-solving actions;
- Client focus - all aspects of the work are guided by the need to improve service delivery to clients; internally and externally, and
- Teamwork - every employee has a specific task / role to perform and the sum of all the actions defines the organisation's destiny, be it success or failure.

The mission and operating environment of the NDPW is to ensure that all the National Departments of the South African government have suitable accommodation that meet their financial, technical and social requirements. This will be facilitated by: providing, developing and maintaining accommodation; managing and maintaining the state property portfolio; creating assets through the community based public works programme, and influencing, and stabilising the construction and property industries and ensuring that infrastructure is provided that creates jobs, empowers communities and develops human resources.

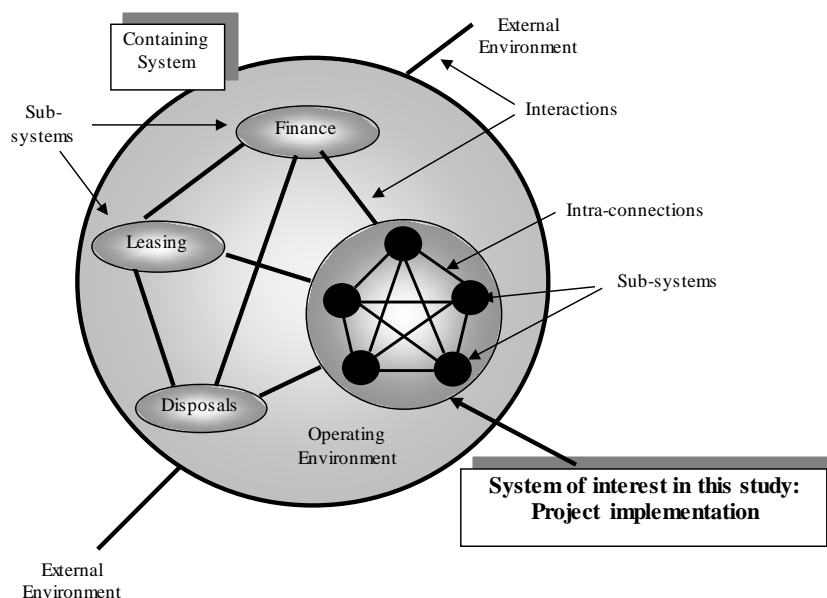
The aims of the NDPW are to provide and manage, in accordance with prescribed standards and directives, the accommodation, housing, land and infrastructure needs of national departments that mainly deal with the security and judicial systems of the country. In addition, to render associated supporting services and to promote the BEE initiatives in line with the proposed immovable assets policy framework and legislation.

The three main objectives of the NDPW are to:

- To intensify the promotion of BEE, including emerging contractors by giving previously disadvantaged contractors, both female and male, opportunities to tender for construction and maintenance contracts;
- Promote human resources development through training and job opportunities for the poorest rural communities where community-based public works programmes are limited, and
- Influence delivery and investment in the construction industry by creating an enabling environment for reconstruction, growth and development in the construction industry of South Africa.

The NDPW's operation environment is illustrated in Figure 2.1 and the system of interest in this study is illustrated in Figure 2.2, which are simple representations of the NDPW as a system comprising internal interacting parts, which together, transform inflows into outflows. Implicit in the figures are notions of organisation, structure, capacity, work and consumption.

Figure 2.1: Operating environment of the NDPW (adapted from Hitchins' System Models, 2005: 2)



To provide further impetus to the planning process and the department's role in the infrastructure development cluster, the NDPW also identified four outcomes from the twelve sector outcomes approved by the South African Cabinet in January 2010 (Republic of South Africa, 2010b: 18-19). The four outcomes that emanated from the department's annual Lekgotla in February 2010 that is the foundation on which the departmental strategic plan is based, to:

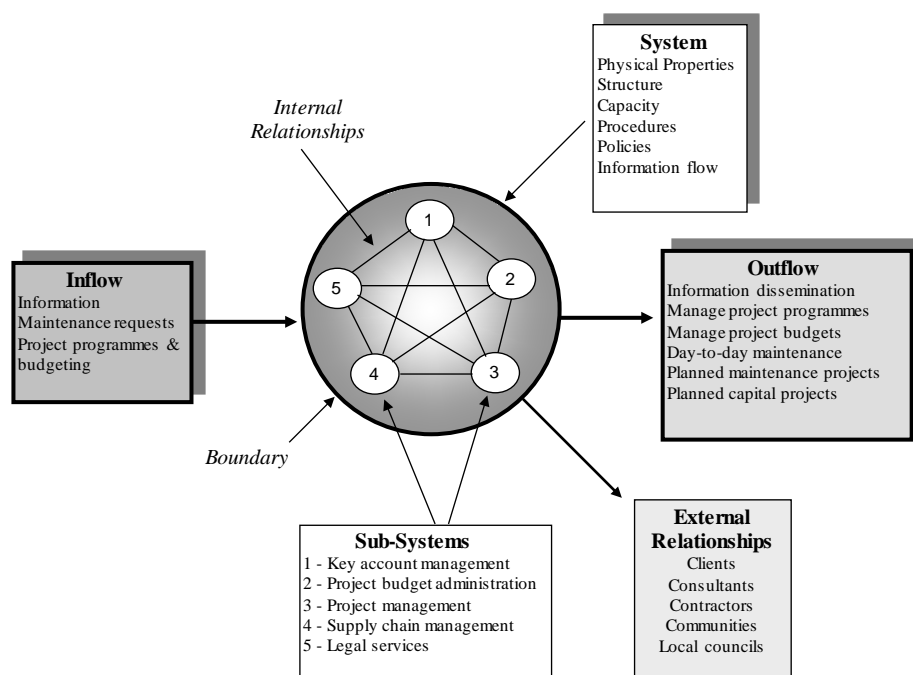
- Create decent employment through inclusive economic growth;

- Create efficient, competitive and responsive infrastructure network;
- Efficient and effective development oriented public service and an empowered fair and inclusive citizenship, and
- Develop a skilled and capable workforce to support an inclusive growth path.

The intended outcomes are to assist the NDPW to improve measurable performance and engender accountable delivery.

Figure 2.2: System of interest in this study: Project Implementation (adapted from Hitchins, 2005:

4)



The above system models provide real strength and clarity of perception once applied to a real situation, to identify system relationships.

As for the second model illustrated in Figure 2.2, the model when viewed dynamically poses the following questions:

- What happens if the inflow exceeds the outflow?
- Is the 'containing system' stable, does it oscillate over time, or is it dynamically stable?
- How is information disseminated and stored within the structure?
- How is gained knowledge shared and managed within the structure?

The interactions create a complementary network. The combination of the systems and interconnections necessitate inflows provided by the other parts of the system's outflows, and *vice versa*. It is clear that should one of the systems fail, the whole project implementation process is impeded and under threat.

The first principal of a system, according to Hitchens (2005: 4), is that: "The properties, capabilities and behaviour of a system derive from its parts, from interactions between those parts, and from interactions with other systems." He also adds a corollary to the first principal: "Altering the properties, capabilities or behaviour of any of the parts, or any of their interactions, affects other parts, the whole system, and interacting systems."

2.2.2 PROGRAMMING OF PROJECTS AND SERVICES

The intension of the three-year programming cycle also referred to as the medium term expenditure framework is to improve budgeting and enabling the NDPW to plan projects in advance. Constant changes in priorities as set by the clients and budget constraints impede timely planning and implementation of projects.

2.2.2.1 Capital works projects

The primary purpose of the capital budget is for the generation of new accommodation and associated infrastructure for clients and is normally achieved through the construction of new buildings, additions to existing buildings, refurbishing of existing buildings to create new accommodation or to incorporate new business processes required by the client.

The NDPW, as the implementing agent, advises client departments on estimates. The clients negotiate with the Department of State Expenditure for appropriate allocations according to their needs. Once allocated, these funds are administered by the NDPW by way of planning and implementing projects on behalf of the clients for the clients. The key accounts and budget administration directorate negotiates with the client resulting in an approved prioritised list of projects for a given financial year. The client receives constant feedback in the form of monthly client forum meetings to monitor both the progress on projects and the expenditure on the budget. Projects in this category for which there are no funds available are then programmed for the following financial year unless the client wishes to cancel another project to accommodate the latter project.

2.2.2.2 Maintenance Projects

Maintenance on a planned basis contain three components: preventative and reactive measures primarily aimed at maintaining the building to a standard in which the client can conduct their core business; aimed at ensuring that the asset does not depreciate, and ensure compliance with existing legislation.

The NDPW receives a budget, allocated in accordance with the three-year maintenance cycle programme, for the maintenance of state property. All client departments are requested to prioritise their needs in terms of the budget according to necessity. This budget is two-fold, which incorporates programmed maintenance projects that are projects listed in order of priority to be executed within a given financial year, and unplanned maintenance projects for day-to-day maintenance and emergency services where planning cannot be forecasted.

2.2.3 PRESENT EVALUATION SYSTEM AND PROBLEM SITUATION

In 2006, the NDPW implemented a Zimisele Service Delivery Improvement Programme (SDIP) to improve the levels and standards of service provided by various operating units of the department. This requires improving work systems, being more responsive in attending to client's needs, growing efficiencies across all departments, delivering quality every time, eliminating waste and thus reducing costs (Republic of South Africa, 2006: 21). In terms of the outcomes, the Zimisele SDIP would complement the 'Leadership Way', which would not only provide for the values that will make the department achieve sustainable success in service delivery, but also seek the following broad results over the next three-year period: measurable improvements in services; formalisation and full adoption of improved business processes for each service through acceptance of and adherence to standards and work procedures; an improved culture reflected in responsive and informed internal service between the units making up the department; service measurement mechanisms that are developed and agreed with staff that apply them; improved utilisation of human and material resources through identification and elimination of waste, and motivated employees with new business processes and behaviours through on-the-job training, delivering better performance.

The Zimisele SDIP (n.d. cited by the Republic of South Africa, 2006: 6) would be the catalyst for providing quality and cost effective service to the NDPW's clients built on four pillars: client

relationship management; project and contract management; property management with a specific focus on leasing, and utilisation and payment of services and facilities management. This unfortunately did not materialise.

Table 2.1, an extract from the Regional Operations Management Plan, illustrates the departmental performance targets (Republic of South Africa, 2010a: 82). The first thought after scrutinising Table 2.1 is the accuracy of the performance figures and achievements as the project implementation process is more *ad hoc* and reactive than planned? Building projects are increasingly complex undertakings. Lengthy business processes, stringent procurement strategies, tighter schedules, tougher building codes and performance requirements, dispersed project team members and lacking performance by contractors exceeds the current capabilities of the NDPW to implement projects where success is the norm. Additional complexity in the design phase and lack of technical expertise of the NDPW PMs create downstream problems in construction where coordination and implementation translates directly into an average of 20% to 30% cost overruns and up to 50% time overruns during construction.

The present evaluation system with regard to service delivery and attaining departmental objectives is completely inadequate as it relies exclusively on statistical data in terms of time, cost, expenditure rate, and contractors appointed. The performance is presently only monitored and measured on the main key performance areas as summarised in Table 2.1 and Table 2.2.

The majority of the key performance areas are quantifiable, while there are no accurate assessments of the actual level of project success, the value added by implementation of projects, nor the degree of client satisfaction or dissatisfaction. Neither the value added by the training and development programmes for emerging contractors as well as awarding contracts to emerging contractors with regard to growth and expansion. The NDPW might be spending their allocated budget, but, 'Is what is being done right?' and 'Is the NDPW realising client satisfaction to the full extent?' The answer to both questions is a definite no as one of the major clients, the South African Police Services (SAPS), has already indicated that they would prefer an alternative service provider due to the cost, quality and predominantly time slippages. The SAPS has also commenced with implementing projects in-house and devolving more police buildings, and doing the required maintenance themselves.

Table 2.1: Key performance areas, indicators and targets (Republic of South Africa, 2003: 23)

Key Performance Area / Output	Performance Indicator	Target
Expenditure of allocated budget.	Percentage of projects delivered as per contractual conditions.	100% expenditure.
Projects completed for the provisioning of accommodation to the clients' needs.	Percentage of projects completed within the designated financial year.	100% completion of all projects.
Attainment of all milestones within the project phases. To be monitored on a monthly basis.	Percentage of milestones attained on projects.	100% attainment of all milestones on projects.
Maintenance, repair and renovations of buildings.	Percentage of requests successfully attended to.	80%
Consultant fee expenditure.	Percentage value of allocated budget utilised for consultants.	18% - to be minimised, strict control and no overspending.
Promotion of the construction industry, and the empowerment of previously disadvantage role-players.	Number of contracts awarded to previously disadvantaged role-players.	20% increase from the previous year - to be maximised.
Geotechnical investigations of sites and ground formation.	Percentage of accurate inspections rendered.	98%
Maintenance of boundary fences and patrol roads on international boundaries.	Percentage of defects.	Zero defects.
Regulating and monitoring of empowering emerging contractors and women.	Percentage of emerging contractors and women empowered.	30 % of contracts awarded to emerging contractors and 5 % to woman - to be maximised.
Client Satisfaction.	Percentage of complaints received.	10 % - to be minimised.

Another major concern is whether the NDPW is really attaining their social objectives of uplifting the previously disadvantaged through awarding tenders, training and development programmes, and at what cost to the taxpayer? Does the cost warrant the expense? The only statistical data that is available in this regard portrays the number of projects awarded and number of training programmes implemented for the emerging contractors and beneficiaries from local communities. There is no accurate record of success rates and the actual value added.

There are various perceptions of the NDPW's success in this regard that is highly subjective. The general opinion is that there is much room for improvement in all areas, as the taxpayers are not getting real value for money.

Table 2.2: Extract from Regional Operations Management Plan (Republic of South Africa, 2010a: 82)

Purpose	To execute construction, maintenance and property and facilities management projects at regional level				
Measurable Objective	Delivery of infrastructure projects through planning, programming, design, construction and commissioning				
Key policy priority	Massive programme to build social and economic infrastructure				
Expected outcome	To create an efficient, competitive and responsive infrastructure network				
Strategic objective	Output	Performance Indicator	Target 2010 / 2011	Target 2011 / 2012	Target 2012 / 2013
Provide strategic leadership in effective and efficient immovable asset management and in the delivery of infrastructure programmes	Construction of Capital Projects	Completion of capital and refurbishment projects in accordance with the capital works implementation programme	80% completion of projects within cost, time, and quality	90% completion of projects within cost, time, and quality	100% completion of projects within cost, time, and quality
	Construction of maintenance projects	Completion of maintenance projects in accordance with the planned maintenance implementation plan	80% completion of projects within cost, time, and quality	90% completion of projects within cost, time, and quality	100% completion of projects within cost, time, and quality

Budgets are allocated according to the previous financial year's performance and expenditure and not in relation to the maintenance backlog within the various regions and their capabilities. This means that no matter how well a region may have performed, it will be allocated more or less the same budget for the following financial year, if not reduced due to an overall budget deficit. If a region performed poorly, their budget is generally reduced. Performing well does not necessarily mean that the allocated budget will be increased. This hampers addressing the ever-increasing maintenance backlog. There is no form of penalties being imposed on regions that mismanage their allocated budget, particularly the regions that overspend or under spend. Funds must then be transferred from other regions to the regions that overspent thereby impeding the well-managed regions' performance by reducing the number of projects to be implemented. This results in allocated budgets being revised three to four times a year, which adds to the

frustrations of managing the budget. This culminates into the annual crisis effort from December to March to spend the allocated budget before the end of the financial year at the end of March, as illustrated in Figure 2.3.

Figure 2.3: Causal Loop Diagram depicting the NDPW's problem situation

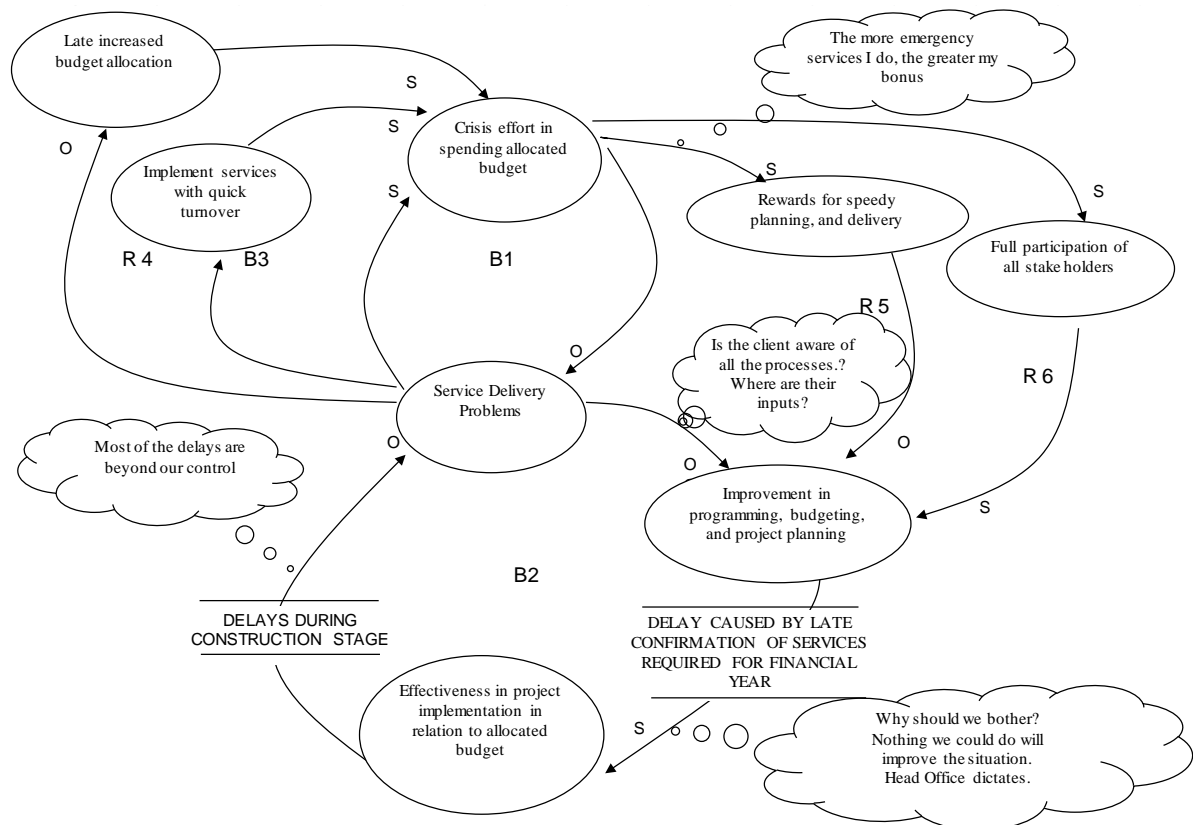


Figure 2.3 illustrates how crisis efforts (B1) improve service delivery in the short term, but worsens the problem in the long term by setting up a reinforcing process of giving rewards for speedy planning and implementation of quick turnover services (R5). This shifts the burden away from the more fundamental, and time-consuming solution of improving project implementation and will not inspire people to improve programming, budgeting and planning in the end (B2). Implementing services with quick turnover (B3) assists in dealing with crisis efforts to improve service delivery, to increase expenditure, and to counter the effect of late increased budget allocations (R4) in the short run. Improvement in programming, budgeting and project planning (B2) will assist in improving implementation of services and ultimately service delivery in the long term (continuous). This will be sustained by full participation of all stakeholders in the short- and long term (R6).

Adding 'thought bubbles' to those links in the diagram represent human choices being made that strengthen mental models of the present situation. The whole process is hampered by the late

confirmation of projects to be implemented and delays during the implementation cycle of projects.

Behaviour over time graphs (BOT), as a system thinking tool illustrates patterns of behaviour that could be explored from a system thinking perspective. BOT graphs also encourage researchers to think about what time frame to use for analysis that would enable them to form theories about why things might be happening as they are in an organisation.

Figure 2.4: Behaviour over time diagrams of the present situation within the NDPW

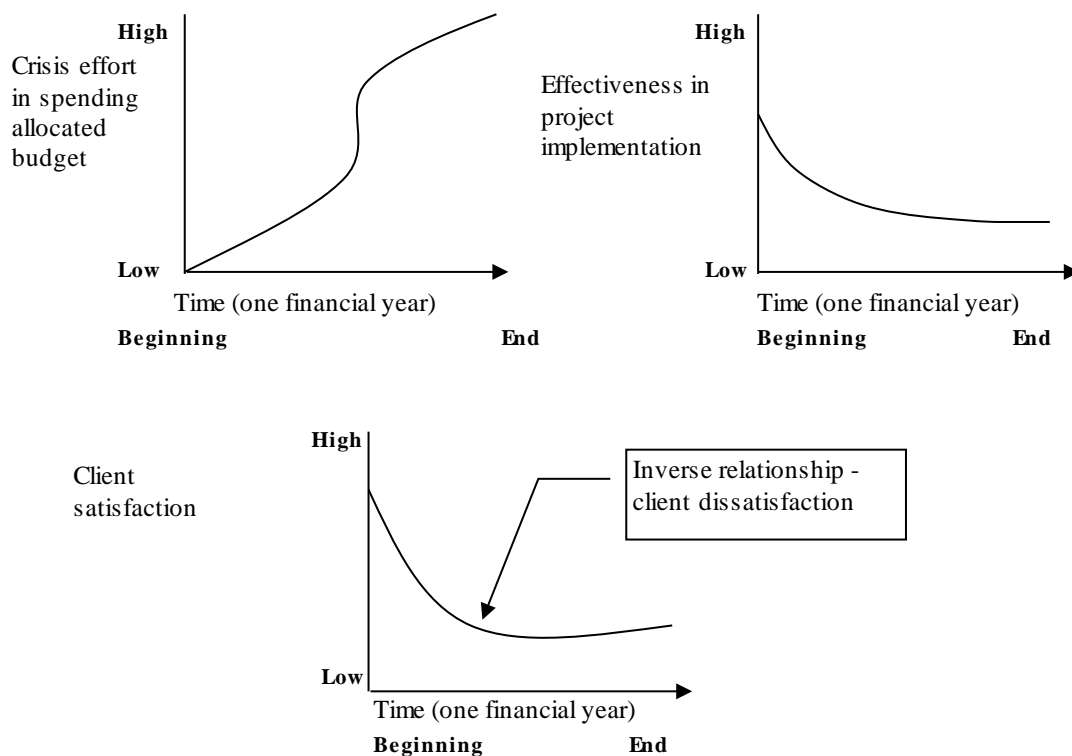


Figure 2.4 illustrates the present situation where the crisis efforts increase dramatically, the effectiveness in project implementation declines as it is hampered by time delays and processes to be followed during the project identification, programming and budgeting phases as well as procuring and the actual implementation of the projects. Client satisfaction declines throughout the year and has only a slight increase at the end of the financial year due to a combination of late increased budget allocation and crisis efforts of the NDPW PMs and support staff. However, the NDPW's experiential and operational domains are comprised of events that are more reactive and responsive actions.

Rae-Dupree (2007 cited by Wideman, 2007: 1) observed that: "It is a pickle of a paradox: As knowledge and expertise increase, creativity and ability to innovate tend to taper off. Why? Because the walls of the proverbial box in which we think are thickening along with our

experience.” It is natural to believe that any corrective action taken will result in improvement in circumstances only to realise a long way down the road that it was the wrong action to implement. With complicated delivery processes integrating several role-players and variables including regulations, delegations, policies and procedures, it stands to reason, that there are bound to be clashes and conflict of interest, inadequate integration and implementation of policies or procedures that culminate into service delivery inefficiencies and problems.

Adopting a systems approach to resolve problems can help to ensure that corrective measures and ideas are meaningful, relevant and appropriate for the situation currently faced with and not generating secondary side effect problems. System thinking can demonstrate how certain actions affect others that could mean the difference between project success or failure, organisational growth or stagnation, and organisational survival or downfall.

2.3 SYSTEM THINKING - A PROCESS OF INQUIRY

The defining characteristic of a system is that it cannot be understood as a function of its isolated components. Firstly, the behaviour of the system does not depend on what each part is doing, but on how each part is interacting with the rest. Secondly, to understand a system it needs to be understood as to how it fits into the larger system of which it is a part. Thirdly, and most important, defining the parts is a matter of perspective and purpose.

According to the IAF (2005: 13), system thinking is not just about re-engineering, it is also a better way for organisations to understand its operational world and its opportunities for influencing a preferred future.

Goodman (2007: 1-3) refers to system thinking as a subtle language that has a very powerful effect on the way people view the world and could be used to produce a better understanding the world’s complexities and interdependencies in a circular rather than linear way of thinking. System thinking is thus a process of achieving a more accurate representation of the world that include elements of focusing on ‘closed interdependencies’, visualisation of the situation, adding precision, forces an explicitness of mental models, and allows examination and inquiry of the system, while comparing it to reality.

A key concept advanced by system thinking according to Senge (1990 cited by Jambekar, 1995: 37-40), is that leverage for organisational transformation comes from the ability to view

interdependency among various elements of the system and locating leverage points to influence current actions.

2.3.1 THE SYSTEM IN SYSTEM THINKING

The following authors define the concept of what a system is:

Ackoff and Emery (1972: 18) define a system as:

“A set of interrelated elements, each of which is related directly or indirectly to every other element, and no subset of which is unrelated to any other subset ... although a system itself may be part of a larger system it cannot be decomposed into independent subsystems.”

Wilson (1984: 20) relates his definition of a system as a whole to the relationships between the elements:

“... the system is first of all a set; i.e. it contains elements that have some reason for being taken together rather than others. But is more than just a set, it also includes the relationships that exists between the elements of that set.”

Checkland (1993: 3) defines the term system as follows:

“The central concept of ‘system’ embodies the idea of a set of elements connected together that forms a whole, showing properties that are properties of the whole, rather than properties of its component parts.”

O’Conner and McDermott (1997: 2) relates to a system as:

“... an entity that maintains its existence and functions as a whole through the interaction of its parts. A system must thus have objectives that must be clear to everyone that forms part of the system.”

Lewis (1994: 43) makes the same distinction of the system as a whole:

“The notion of a ‘system’ arises from the need to be able to investigate complex situations in a holistic way that takes account of the possibility of emergent properties. A basic definition of a system is then a set of inter-related components organised together to form an entity that, as a whole, has emergent properties that belong to no single component or subset of the components of which it is formed.”

Henderson (2001: 1) defines a system as being:

“... a whole which cannot be divided into independent parts and the system has properties that none of the individual parts has. The output of a system is not the sum of its parts, but the product of their interactions. When disassembled the system loses its properties and so does its parts.”

System thinking according to Dekker (2007: 1), is the process of understanding how things influence one another within a whole.

System thinking has been defined as an approach to problem solving, by viewing ‘problems’ as parts of an overall system, rather than reacting to specific part, outcomes or events and potentially contributing to further development of unintended consequences. System thinking is not one thing but a set of practices within a framework that is based on the belief that the component parts of a system can best be understood in the context of relationships with each other and with other systems, rather than in isolation. System thinking, according to the Waters Foundation (2009:13), focuses on cyclical rather than linear cause and effect.

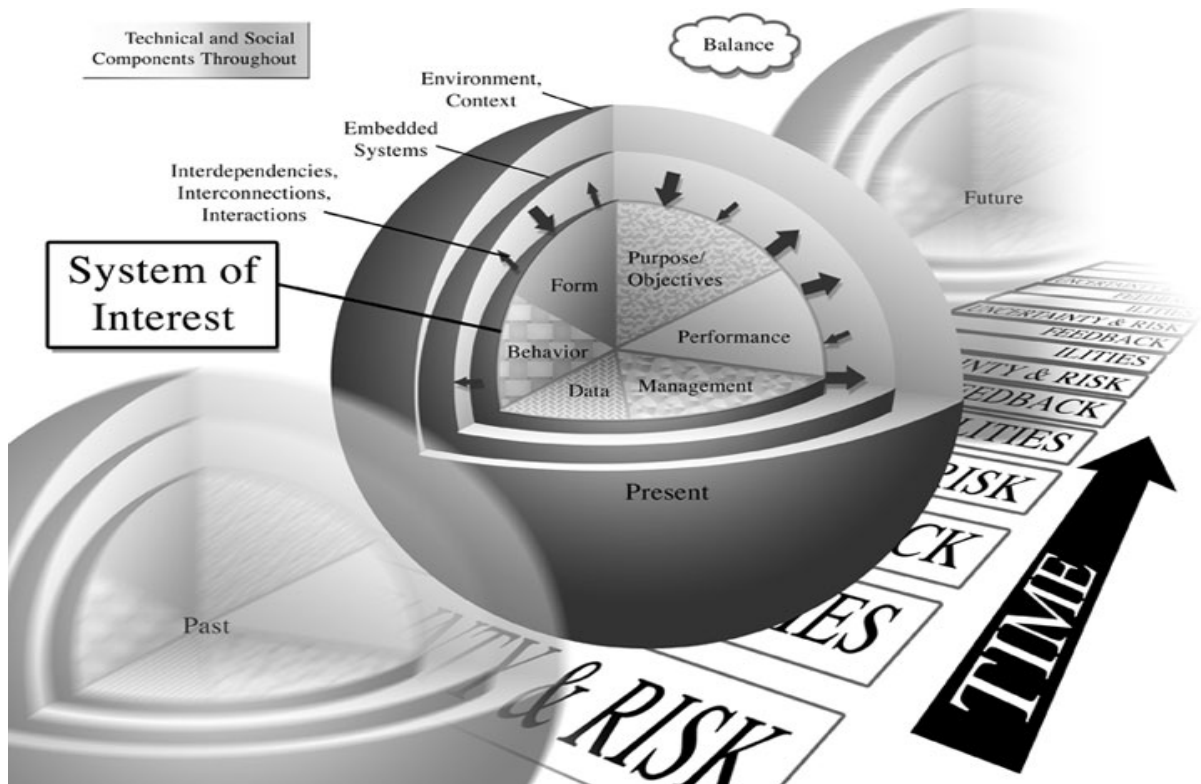
System thinking acknowledges that an improvement in one area of a system can adversely affect another area of the system, and it promotes organisational communication at all levels in order to avoid the silo effect. System thinking techniques may be used to study any kind of system whether it is natural, scientific, engineered, human or conceptual.

Ackhoff (2000: 1) maintains that system thinking gives a more accurate picture of reality, to facilitate working with a system’s natural forces in order to achieve the desired results. He also states that it encourages people to think about problems and solutions with an eye toward the long run. Ackhoff further adds that system thinking is a conceptual framework that offers a powerful new perspective, a specialised language, and a set of tools such as rich pictures and causal loop diagrams that are used to address the most stubborn problems in everyday life and work. System thinking facilitates understanding reality that emphasises the relationships among a system’s parts, rather than the parts themselves.

Capra (1996 cited by the Waters Foundation, 2009: 12), was of the opinion that it is the only way to fully understand why a problem or element occurs and persists, and to understand the parts in relation to the whole, it proposes to view systems in a holistic manner. Consistent with systems philosophy, system thinking depicts an understanding of a system by examining the linkages and interactions between the elements that compose the entirety of the system that include the environment in which the system operates, the embedded systems, the

interdependencies, interconnections and interactions within the system as illustrated in Figure 2.5). Lessons from the past must be heeded and tested in the present to prevent reoccurrence of the same problems in the future.

Figure 2.5: Conceptual illustration of system thinking (Davidz, 2006: 6)



Both Ryan (1995: 12) and Davidz (2006: 6) state that each stakeholder influences the behaviour of the system and that the effect of its influence will depend on its interaction with other stakeholders. This means that each element of the sub-system has an effect on the behaviour of the whole and none has an independent effect on it.

2.3.2 THE USE OF SYSTEM THINKING TOOLS AND ARCHETYPES

The system thinking approach incorporates several tenets according to Skyttner (2006: 11):

- Interdependence of objects and their attributes - independent elements can never constitute a system;
- Holism – emergent properties not possible to detect by analysis should be possible to define by a holistic approach;
- Goal seeking - systemic interaction must result in some goal or final state;

- Inputs and outputs - in a closed system inputs are determined once and constant; in an open system additional inputs are admitted from the environment;
- Transformation of inputs into outputs - this is the process by which the goals are obtained;
- Entropy - the amount of disorder or randomness present in any system;
- Regulation - a method of feedback is necessary for the system to operate predictably;
- Hierarchy - complex wholes are made up of smaller subsystems;
- Differentiation - specialised units perform specialised functions;
- 'Equifinality' - alternative ways of attaining the same objectives - convergence, and
- 'Multifinality' - attaining alternative objectives from the same inputs -divergence.

System thinking tools according to Goodman *et al.* (2007: 1-3), are used to:

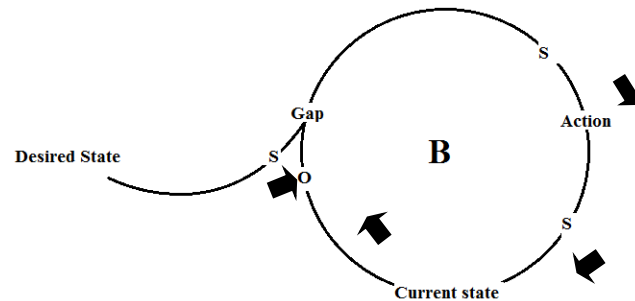
- Understand why systems behave the way they do over time;
- Encourages people to examine mental models or the deeply held assumptions that influence the way people think or act;
- Define problems, formulate and test potential solutions;
- Implement effective solutions that endure;
- Shed light on the root causes of a problem(s) and facilitates anticipation of the multiple consequences of the solutions;
- Avoid solutions that could lead to more difficulties;
- Use as group setting to learn together -knowledge and understanding, and
- Teach people to ask the right questions - framing questions.

Thinking in circular causal effect terms replaces linear causal thinking in system thinking as systems incorporate feedback, which introduces the circularity and attempting to balance itself. Systems use building blocks, reinforcing loops and balancing loops. This may appear deceptively simplistic, yet the depth of understanding gained through their use can be rather astonishing. There are a few conventions for reading system diagrams. First, an arrow indicates the direction of influence from one element to another. Associated with the arrow will be an 'S' or a '+' indicating a change in the same direction, or an 'O' or a '-' indicating a change in the opposite direction. The centre of the diagram contains either a 'B' for balancing loop, or an 'R' for reinforcing loop.

Figure 2.6 illustrates the balancing loop that attempts to move some current state to a desired or reference state through some action. The structure may begin with the current state greater or

less than the desired state, in which case the current state may approach the desired state from above or below.

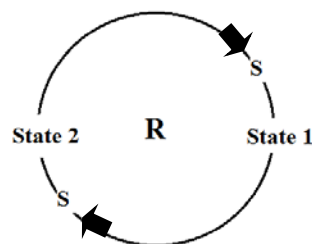
Figure 2.6: The balancing loop (Bellinger, 2004: 1)



The desired state interacts with the current state to produce a gap. The larger the gap, the stronger the influence to action. The action taken then moves the current state toward the desired state reducing the gap. When the action succeeds in moving the current state to the desired state the gap reduces to zero and there is no more influence toward action.

The reinforcing loop structure feeds on itself to produce growth or decline as shown in Figure 2.7. As state one increases or decreases state two is influenced to move in the same direction. State two then influences state one to continue to move in the same direction it is moving. Because this structure is reinforcing it generally produces an exponential growth or decline. This exponential change may be unnoticeable over time until it reaches a noticeable change.

Figure 2.7: The reinforcing loop (Bellinger, 2004: 2)



Bellinger (2004: 1-35) presents a number of systems archetypes that occur in organisations, groups and individuals. Systems archetypes are generic structures, which embody the key to learning how to see structures in people's personal and organisational lives. They are types of systemic structures that recur repeatedly. Their knowledge helps to identify and understand the underlying causes of problems and identify, possible leverage – and advantage points in the system.

Other examples of system archetypes include:

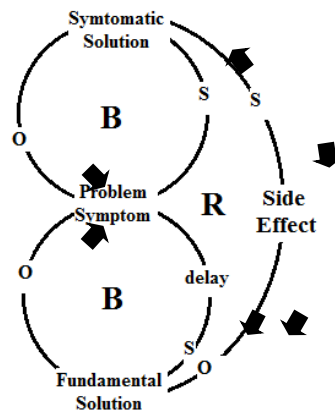
- Balancing process with delay;
- Limits to growth;
- Shifting-the-burden;
- Eroding goals;
- Success to the successful;
- Escalation;
- Tragedy of the commons;
- Growth and under investment, and
- Fixes that fail.

Lewis (2007: 476-478) maintains that the shifting-the-burden pattern, as illustrated in Figure 2.8 is prevalent throughout government and corporate organisations that occurs when a problem causes a symptom but it is difficult to solve or address because it could be either obscured or too costly. A shifting-the-burden structure is composed of two balancing loops and a reinforcing loop. The two balancing loops act as a single reinforcing loop that migrate the situation in the same direction as the reinforcing loop. Both structures end up moving the system in a direction other than the one desired.

The burden problem shifts to some other symptomatic solution(s) that might just be a quick fix that only deals with the symptom and not the real problem, which could lead to another problem or side effect, only to be rectified much later when it is realised what the real problem was. Inevitably, the fundamental problem could also create other problems that were not foreseen that causes the process to repeat itself.

Figure 2.8 illustrates a problem symptom perceived with multiple possible courses of action. One course of action, the symptomatic solution has an apparent timeframe advantage over the fundamental solution because of other associated delays. As a result, the problem symptom influences the application of the symptomatic solution. Application of the symptomatic solution reduces the problem symptom, which dissolves the perceived necessity of pursuing the fundamental solution. A failure to implement the fundamental solution ensures that the problem symptom will return.

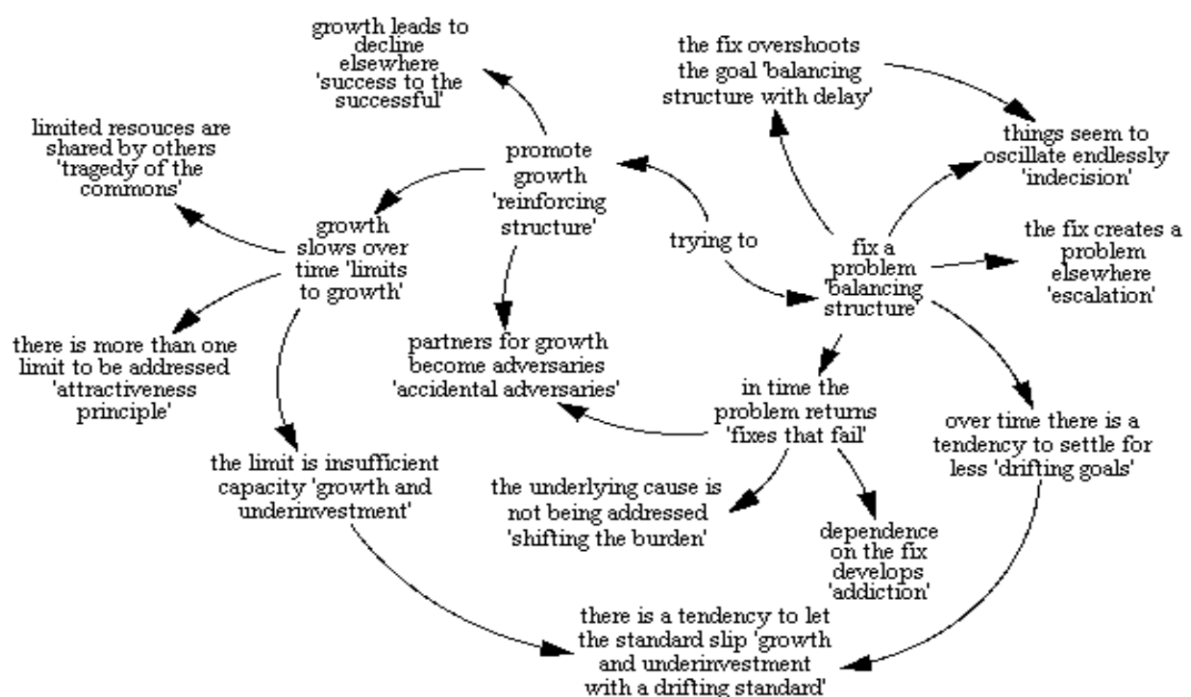
Figure 2.8: Shifting-the-Burden Structure (Bellinger, 2004: 2)



Implementation of the symptomatic solution often influences the development of unintended side effects, which are usually some sort of dependency. This side effect further dissolves the perception that there is a need to pursue the fundamental solution. The interactions between the problem symptom, symptomatic solution, side effect, and fundamental solution generates a viscous reinforcing loop which make the problem even more difficult to resolve.

The archetype template is a specific tool that helps identifying archetypes operating in an organisation's strategic areas. The template shows the basic structural form of the archetype but lets the users fill in the variables of their own situation. Figure 2.9 illustrates the relationships between the archetype structures.

Figure 2.9: Relationships between system archetypes (Adapted from Bellinger, 2004: 8)



The relationships between system archetypes is an involved unfolding set of pattern relations which is an effective engenderment facility that does not purport to provide answers but provides access to fundamental principles, with supporting information, to develop understanding to support the development of strategies to address situations. Not just any strategies, but strategies that have a very high probability of working when applied. This requires a thorough understanding of systems, system thinking as to how people formulate questions influences the answers they develop.

2.3.3 SYSTEM THINKING IN PROJECT MANAGEMENT

Leonard and Beer (1994: 1) views the systems approach as being a different way of dealing with the planning and direction of action that emphasises process whereby they compare the reductionist and systems problem solving methodologies (Table 2.3).

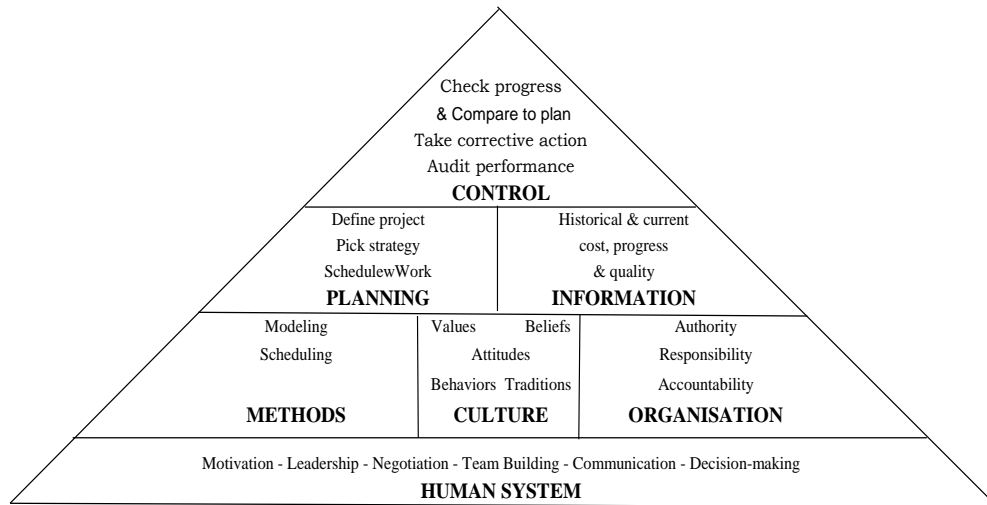
Table 2.3: Reductionist and systems problem solving methodologies (Leonard and Beer, 1994: 1)

Reductionist Approach	System Approach
Focuses on parts.	Focuses on wholes.
Linear causality - A causes B.	Circular causality - A causes B causes C causes A.
Observer status objective.	Observer status subjective.
Context not very relevant.	Context highly relevant.
One 'truth' or best answer.	Multiple truths and answers.
Externalities not important.	Externalities important.
Problems solved.	Problems dissolved.

In a systemic structure such as project implementation within the NDPW, the causes and patterns of events to occur must be scrutinised and resolved in order to prevent it from happening again. The key is to identify and treat the real cause of the problem, and not the symptom of the problem which normally only has short-term success with possible more adverse negative effects in the future.

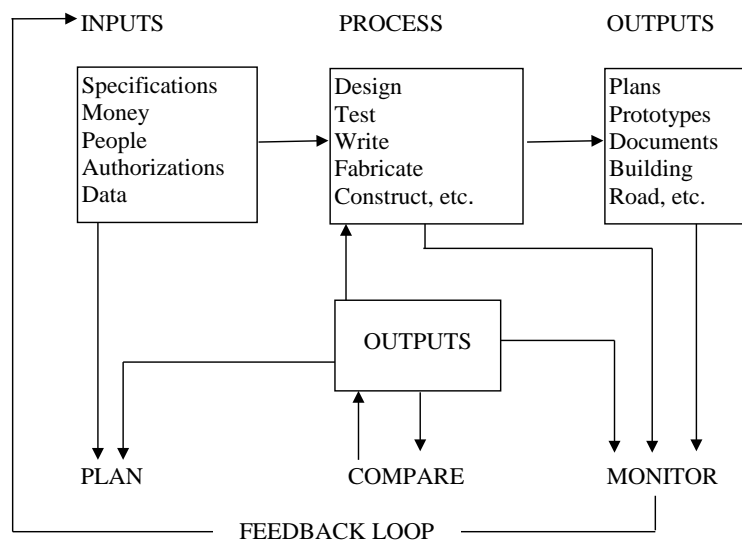
Lewis (2007: 22) defines the project management system as having seven components, as illustrated in Figure 2.10. If any one of these components is defective, then the management of projects will suffer. Note that the human system placed at the bottom is because it forms the foundation for everything else. Dealing with people is a major function of the PM due to their responsibilities, often with very little authority especially in the public sector.

Figure 2.10: Project management as a system (Lewis, 2007: 23)



PMs in organisations generally compete for scarce resources to get their jobs done. Lewis (2007: 476) states that if only they realise that their self-interest should lie in co-operation, rather than competition, the project teams and support staff would function better. Each PM wants to optimise their project(s) with no regard for the impact on the other PMs or teams. From a systems point of view, Lewis adds, anything that is done to help the organisation in one area tends to help the entire system and conversely, anything done to hurt, hurts everyone and consequently the organisation.

Figure 2.11: The third-order feedback system (Adapted from Lewis, 2007: 200)



Lewis (2007: 476) explains that it has the same basic elements of the first order system. The third order system feeds information about the system outputs to the comparator, which weighs

them against the original plan (Figure 2.11). If there is a discrepancy, the information is passed to an adjust element, which must decide if the discrepancy is caused by something being wrong with the process, the inputs or the plan itself. Once that determination is made, the adjust element calls for a change in the plan, inputs, or process itself. In a project environment, this means that when monitoring progress on a project on a monthly basis and the problem occurs, it may be necessary to begin to monitor weekly. If the problem becomes serious enough, the monitoring rate may increase to several times each week or even daily. Monitoring is then reverted back monitoring once the problem has been solved. The experienced gained is then transferred to the next project via the feedback loop.

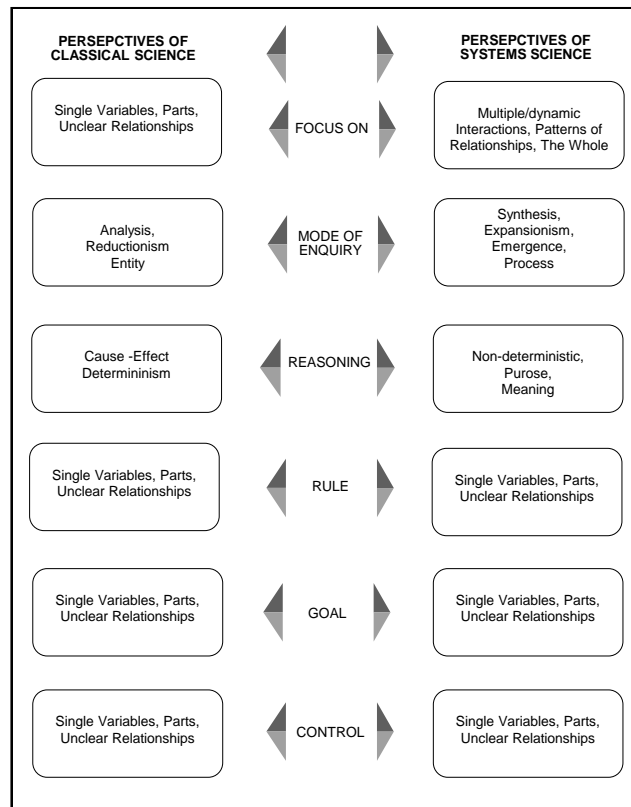
System thinking, according to Rodgers (2008: 2), provides the means to understand work as a system. It leads to the design and management of work from the outside-in, managing flow rather than function. It requires the development of different measures and methods, and principles that lead to reductions in the number of steps, reductions in end-to-end time, reductions in waste, improved service, and reduced costs.

Rodgers (2008: 2) argues that managers manage with the output or financial data. Their view of the organisation is conditioned by the data that is used. Problems are invariably thought of as variations from budget and such variations attract management's attention. While such a view will show up problems of expenditure or cost, the actual causes can only be illuminated by a systems view for identifying opportunities and scope for improvement. Table 2.4 summarises the differences between traditional thinking and system thinking and Figure 2.12 between classical and systemic orientation.

Table 2.4: Traditional thinking versus system thinking (Rodgers, 2008: 1)

Traditional thinking		Systems Thinking
Top-down.	Perspective	Outside-in.
Functional specialisation.	Design	Demand, value and flow.
Separated from work.	Decision-making	Integrated with work.
Related to budget, showing activity, productivity, standards.	Measures	Related to purpose, demonstrating capability.
Contractual.	Attitude to clients	What matters (Co-operation).
Extrinsic (incentives).	Motivation of people	Intrinsic (pride).

Figure 2.12: Key distinctions between classical and systemic orientation (Banathy, 2004: 2)



Rodgers (2008: 3) cites a number of key principles of system thinking:

- Understand what clients want and only do work that improves their experience of the service;
- Ensure work goes out 100 per cent perfect, taking whatever time is needed and drawing on all necessary resources;
- Manage the client through to the end of the process, keeping them informed of progress and the service levels they can expect;
- Organise work so that it is as error-proof as possible;
- In meeting demand, work on the principle of first in - first out;
- Seek to improve the end-to-end flow of work through the system every day, and
- Use measures that tell staff how well they are achieving things that matter to clients, not official specifications.

Seddon (2009: 2) argues that “system thinking reveals all - when you are able to view your organisation as a system you learn about the ‘what and why’ of the current performance. You can see what could be achieved as well as what needs to be changed to realise the potential improvements.” Adopting a system view, according to Seddon (2009: 3), differs from the traditional hierarchical view where the latter views the organisation as having parts or functions.

The system view is to look at the whole, which is more than just understanding how the parts work that leads to a different approach in solving problems.

Rodgers (2008: 3) is of the opinion that system thinking organisations have three key operating principles:

- Ensure that continuous improvement of client service and efficiency becomes an integral part of the way that the business operates. The goal of continuous improvement becoming integral to the way the business operates is achieved by ensuring everyone in the organisation is using the same principles, action is taken on the system that improves performance in a consistent manner. It is an approach that ensures integrity between people's thinking and behaviour, and their actions on the way the work works;
- Provide all staff with the tools and perspectives needed. Working in this way ensures it is easy to deliver excellent service, as it is easy to get things right and difficult to get things wrong. Quality is built into the system from the start, and
- Overcome any resistance to change. Using a 'normative' approach to change, i.e. 'learn' rather than 'tell', involves people in understanding how their current system works today – what makes it sub-optimal and how their own thinking and behaviour contribute to the system's current capability. From this position, people feel able to make informed choice about what to do.

Kerzner (2009: 365) is of the opinion that “project management cannot succeed unless the PM, project team, the parent organisation and the client organisations are willing to employ the systems approach to project management by analysing those variables that lead to success and failure.”

2.3.4 SYSTEM THINKING AND LEARNING ORGANISATIONS

Learning organisations, according to Senge (1990: 50), are “those organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.”

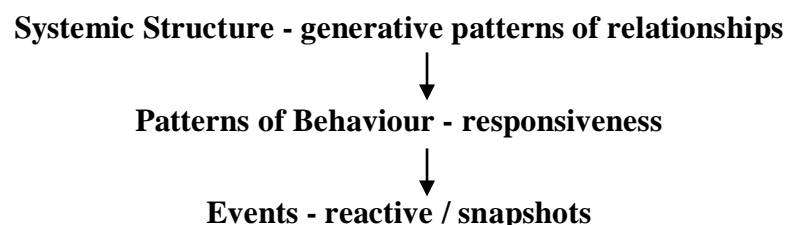
Senge (1990: 50 – 51) argues that only those organisations that are able to adapt quickly and effectively will be able to excel in their field or market. In order to be a learning organisation there must be two conditions present at all times. The first is the ability to design the organisation to match the intended or desired outcomes and second, the ability to recognise

when the initial direction of the organisation is different from the desired outcome and follow the necessary steps to correct this mismatch. Organisations that are able to do this are exemplary. System thinking focuses on how the individual that is being studied interacts with the other parts of the system, rather than focusing on the individuals within an organisation it prefers to look at a larger number of interactions within the organisation and in between organisations as a whole.

According to Senge (1990: 53), contemporary society focuses predominantly on events, less so in patterns of behaviour, and very rarely on systemic structure. Leaders in learning organisations must reverse this trend, and focus their organisation's attention on systemic structure. This is because *event* explanations, i.e. 'who did what to whom' doom their stake holders to a reactive stance toward change. Pattern-of-behaviour explanations are limited to identifying long-term trends and assessing their implications and they suggest how, over time, people can respond to shifting conditions, referred to as adaptive learning. Structural explanations are the most powerful but only address the underlying causes of behaviour at a level such that patterns of behaviour can be changed, also referred to as generative learning.

Fragmentation has forced people to focus on 'snapshots' to distinguish patterns of behaviour in order to explain past phenomena or to predict future behaviour according to Senge (1990: 52). This is essentially the treatment used in statistical analysis and econometrics, when trying to decipher patterns of relationship and behaviour. Events do not dictate behaviour; instead they are the product of behaviour Senge (1990: 52). What really cause behaviour are the interactions between the elements of the system.

There are three distinct levels to view reality:



Senge (1990: 139) advocates that "... organisations learn only through individuals who learn. Individual learning does not guarantee organisational learning, but without it no organisational learning occurs." Senge identifies five disciplines that learning organisations must possess of which system thinking is seen as the most important as it underlies the rest:

- System thinking is a conceptual framework, a body of knowledge and uses tools to clarify patterns of problems, issues and situations and facilitates changing them effectively;

- Mental models are deeply ingrained assumptions, generalisations, pictures or images that influence behaviour and understanding of the world. It also focuses on the openness needed to unearth shortcomings in present ways of seeing the world. It fosters the personal motivation to continually learn how actions affect the world;
- Personal mastery is the discipline of continually clarifying and deepening or personal vision, of focusing people's energies of developing patience and seeing reality objectively;
- Building shared vision is that discipline wherein people are bound together around a common identity and sense of destiny whereby they excel and learn, and fosters commitment to the long-term, and
- Team learning through dialogue team members suspend assumptions and enter into genuine thinking together. Team learning develops the skills of groups of people to look for the larger picture that lies beyond individual perspectives.

For system thinking to be effective, it requires the disciplines of mental models, personal mastery, building shared vision and team learning to realise its potential.

System thinking makes the subtlest aspect of the learning organisation understandable and the new way individuals perceive themselves and their world. At the heart of a learning organisation is a shift of mind from seeing ourselves as separate from the world to connected to the world, from seeing problems as caused by someone or something 'out there' to seeing how a person's own actions create the problems they experience. A learning organisation is a place where people are continually discovering how they create their own reality and how they can change it.

Senge (1990: 22-35) maintains that generative learning cannot be sustained in an organisation if people's thinking is dominated by short-term events. When focusing on events, the best that could be done is to predict an event before it happens to be able to react timely and optimally.

Senge goes on and explains that once the idea of system thinking is embraced, individual learning can improve by inducing people to focus on the whole system. By providing individuals with skills and tools to enable them to derive observable patterns of behaviour from the systems they see at work, the next step is to justify why system thinking is even more important to organisations of people. Herein the discipline of system thinking is most clearly interrelated with the other disciplines, especially with mental models, shared vision, and team learning.

Patterns of relationships or systems are derived from people's mental models that are their perceptions about how the relevant parts of a system interact with one another. Naturally,

different people have different perceptions about what the relevant parts of any one system are, and how they interact with one another. In order for organisational learning to occur, individuals in the organisation must be willing and prepared to reveal their individual mental models, contrast them to one another, discuss the differences, and come to a unified perception of what that system really is.

This alignment of mental models is referred to as developing a shared vision. It is possible that mere discussion among individuals may lead them to a shared vision but, because problems are often too complex, usually this exercise requires the aid of some skills and tools developed by systems thinkers. Whether simple or complex frameworks are used such as word-and-arrow diagrams or computer simulation, they are essential instruments to developing a shared vision. Team learning or organisational learning is only possible when groups of individuals who share a system also share a vision about how the components of that system interact with one another.

First, they learn from one another in the process of sharing their different perspectives. Many organisational problems can be solved simply by creating alignment. For example, co-operation is a lesson that people learn who recognise that they belong to different interdependent parts of the same system.

Secondly, people learn together by submitting their shared vision to testing. When complex dynamics exist, a robust shared vision allows organisational members to examine assumptions, search for leverage points, and test different policy alternatives. This level of learning often requires simulation, which is a much more specialised systems technique. Any malfunctioning part or element leads to the dysfunctions of the system.

2.3.5 SYSTEM MODELLING

It is commonly recognised that the power of statistical models is limited to explaining past behaviour, or to predict future trends as long as there is no significant change in the pattern of behaviour observed in the past. These models have little to say about changes made in a system until new data can be collected and a new model is constructed. Thus, basing problem solving upon past events is, at best, a reactive effort.

Models, simplifications of the real thing, are constructed to facilitate studying what is sought to be understood. In Bellinger's (2004: 1) dictions about constructing models she argues that whether a model is right or wrong is simply a value judgment, whether it is correct or incorrect is something that will be evident in time. The most important question to ask should relate to the

extent to which do models that are developed, promote the intended development of understanding. The extent to which a model aids in the development of understanding is the basis for deciding how good the model is.

Bellinger further adds that in developing a model there is always a trade-off. A model is a simplification of reality, and as such, certain details are excluded from it. The question is always what to include and what to exclude. If relevant components are excluded there is a chance of the model being too simplistic in nature and will not support the development of the understanding desired. On the other hand, if too much detail is included, the model may become so complicated that, again, it fails to promote the development of the deeper levels of understanding one seeks.

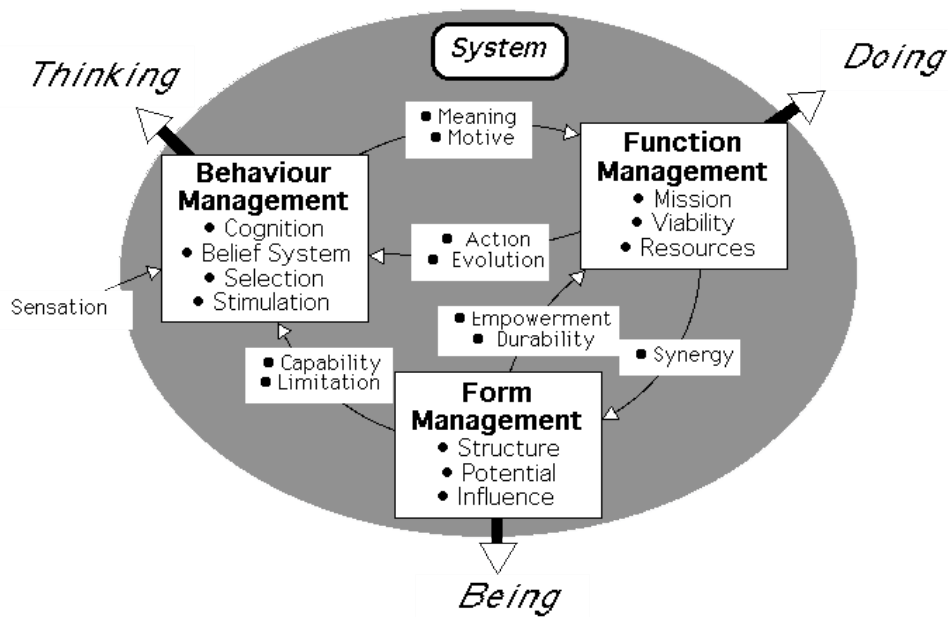
Hitchins (2005: 16) argues that for any system to persist in its pursuit of the mission of the organisation, it must remain viable and that the viability is founded on five pillars:

- Synergy, co-operation and co-ordination between various parts within a system to produce some external effect;
- Evolution, the adaptation of a system in line with or in response to changes in its environment;
- Survival, management of threats, generally by avoiding detection, self-defence or damage, tolerance, or some combination of these;
- Homeostasis, the regulation within the system to provide the internal parts with a suitable environment in which to function, and
- Maintenance, detection, location and the replacement of non-functioning parts.

Hitchins' (2005: 6-7) Generic Reference Model (GRM) illustrates in Figure 2.13 that any system consists of three parts: form, function, and behaviour. It represents those parts of a system, which correspond to 'being or existing', 'doing or functions', and 'thinking or behavioural response'.

The GRM does not explain why a system exists, functions or behaves, but shows what features must rationally exist for properties and capabilities to arise. For example, the model does not predict particular behaviour, instead it indicates what features must be present in any system that can respond adaptively to different stimuli, i.e. those features which go towards the management of behaviour. The model is based on extensive research into a variety of systems to find those features that are common to them all.

Figure 2.13: Generic reference model (Hitchins, 2005: 6)



System modelling is fundamentally different. Once the behaviour of a system is understood to be a function of the structure and of the relationships between the elements of the system, the system can be artificially be modified and, through simulation, it can detect whether the changes made result in the desired behaviours. As a result, system thinking coupled with modelling, constitutes a generative rather than adaptive learning instrument.

Bellinger (2009: 1) is of the opinion that a systems view is somewhat in contradiction with the concept of analysis, which is breaking things down into smaller pieces to simplify the study. Analysis is an important technique but brings with it the risk of potentially losing the most relevant emergent characteristics of the system, and possibly developing a less than sufficient understanding. On the other hand, synthesis is the combining of two or more parts to create something different from the original parts.

Bellinger (2009: 1) adds that while a systemic intervention employing system thinking and system dynamics is an approach that can provide a very rational view of the situation, as well as the identification of approaches that are highly likely to produce the desired result, it is an approach that requires a substantial investment of effort.

2.3.6 LEVERAGE POINTS IN SYSTEMS

There are various internal and external factors, which interact to create an ultra-stable system within an organisation. Internal factors being goals and objectives of individuals, established

policies and procedures, structure of the organisation, job responsibilities, appraisal systems, reward systems, management and leadership styles. External factors consist of market conditions, competition, politics, economic conditions, technological change, sociocultural factors, and imposed rules. These factors interact to create a stable system that changes its point of stability over time, yet resists change in any specific way. Bellinger (2004: 5) argues that if the system dynamics are not understood, attempts to change the system will be resisted by the system, subsequently frustrating the change agent. Determining appropriate ways of influencing the system to create lasting improvement can only be achieved thorough understanding the system, and identifying leverage points.

Meadow's leverage points (2009: 41-49), is a classic reference for those seeking to implement change in a system. She started with the observation that there are levers, or places within a complex system such as an organisation, a city, an economy, a living being, or an ecosystem, where a small shift in one thing can produce big changes in everything. Meadow claimed that managers need to know about these 'shifts', where they are and how to use them. Meadow is also of the opinion that most people know where these points are instinctively, but tend to adjust them in the wrong direction.

Meadow (2009: 49) lists twelve leverage points to intervene in a system in an increasing order of effectiveness:

- Constants, parameters, numbers such as subsidies, taxes, standards. Parameters are points of lowest leverage effects. Though they are the most clearly perceived among all leverages, they rarely change behaviours and have little long-term effect;
- The size of buffers and other stabilising stocks, relative to their flows. A buffer's ability to stabilise a system is important when the stock amount is much higher than the potential amount of inflows or outflows. In the lake, the water is the buffer. If there's a lot more of it than inflow / outflow, the system stays stable;
- Stock-and-flow structures. Physical systems and their nodes of intersection such as transport network, population age structures. A system's structure may have enormous effect on operations, but may be difficult or prohibitively expensive to change. Fluctuations, limitations, and bottlenecks may be easier to address;
- Length of delays relative to the rate of system changes. Information received too quickly or too late can cause over- or under reaction, even oscillations;
- Strength of negative or balancing feedback loops, relative to the effect they are trying to correct against. A negative feedback loop slows down a process, tending to promote

stability. The loop will keep the stock near the goal, thanks to parameters, accuracy and speed of information feedback, and size of correcting flows;

- Gain around driving positive feedback or reinforcing loops. A positive feedback loop speeds up a process. Meadow states that in most cases, it is preferable to slow down a positive loop, rather than speeding up a negative one;
- Structure of information flow i.e. who does and does not have access to what kinds of information. Information flow is neither a parameter, nor a reinforcing or slowing loop, but a loop that delivers new information. It is cheaper and easier to change information flows than it is to change structure;
- Rules of the system such as incentives, punishment, and constraints. Pay attention to rules and to who makes them;
- Self-organisation - power to add, change or evolve the system structure. Self-organisation describes a system's ability to change itself by creating new structures, adding new negative and positive feedback loops, promoting new information flows, or making new rules;
- Goals - the purpose or function of the system. Changing goals changes every item listed above: parameters, feedback loops, information and self-organisation;
- Paradigm that the system and its structure, rules and parameters arises from. A societal paradigm is an idea, a shared unstated assumption, or a system of thought that is the foundation of complex social structures. Paradigms are very hard to change, but there are no limits to paradigm change. Meadow argues that paradigms might be changed by repeatedly and consistently pointing out anomalies and failures in the current paradigm to those with open minds, and
- Power to transcend paradigms. Transcending paradigms may go beyond challenging fundamental assumptions, into the realm of changing the values and priorities that lead to the assumptions, and being able to choose among value sets at will.

People fail to recognise their purpose as a part of the organisation. Instead, they see themselves as an inconsequential part of a system over which they have little influence, leading them to limit themselves to the jobs they must perform at their own positions. This makes it hard to pinpoint the reason why an organisation is failing, with so many hidden 'loose screws' around. The tendency to see things as results of short-term events undermines the ability to see things on a grander scale.

Although system thinking is geared towards complex, dynamic environments that often include human factors, the process requires a current system to be taken into account. Even if the goal is

to create a new system that is not similar to any existing system, there is always the possibility to compare with existing ideas or practices if the concepts are viewed at a high enough level.

2.4 OVERVIEW OF PROJECT MANAGEMENT, ORGANISATIONAL COMPETENCIES AND EXPECTATIONS

Organisations that have not traditionally been involved in projects are increasingly turning to project management without fully understanding its underlying philosophy, principles and practices. Du Plessis and Hoole (2006: 36) state that this 'project management rush' by organisations of all kinds results in a situation where many organisations are faced with the dilemma of not doing as well as they had anticipated, such as the NDPW.

2.4.1 UNDERSTANDING PROJECT MANAGEMENT

2.4.1.1 What is a Project?

Burke (2007a: 16) defines a project as being a beneficial change which uses the special project management techniques to plan and control the scope of work in order to deliver a product to satisfy the client's and stakeholders' needs and expectations. Kerzner (2009: 2-3) defines a project to be any series of activities and tasks for achieving a specific objective to be completed within certain specifications, time, and resource limitations.

2.4.1.2 Distinctive features of a project

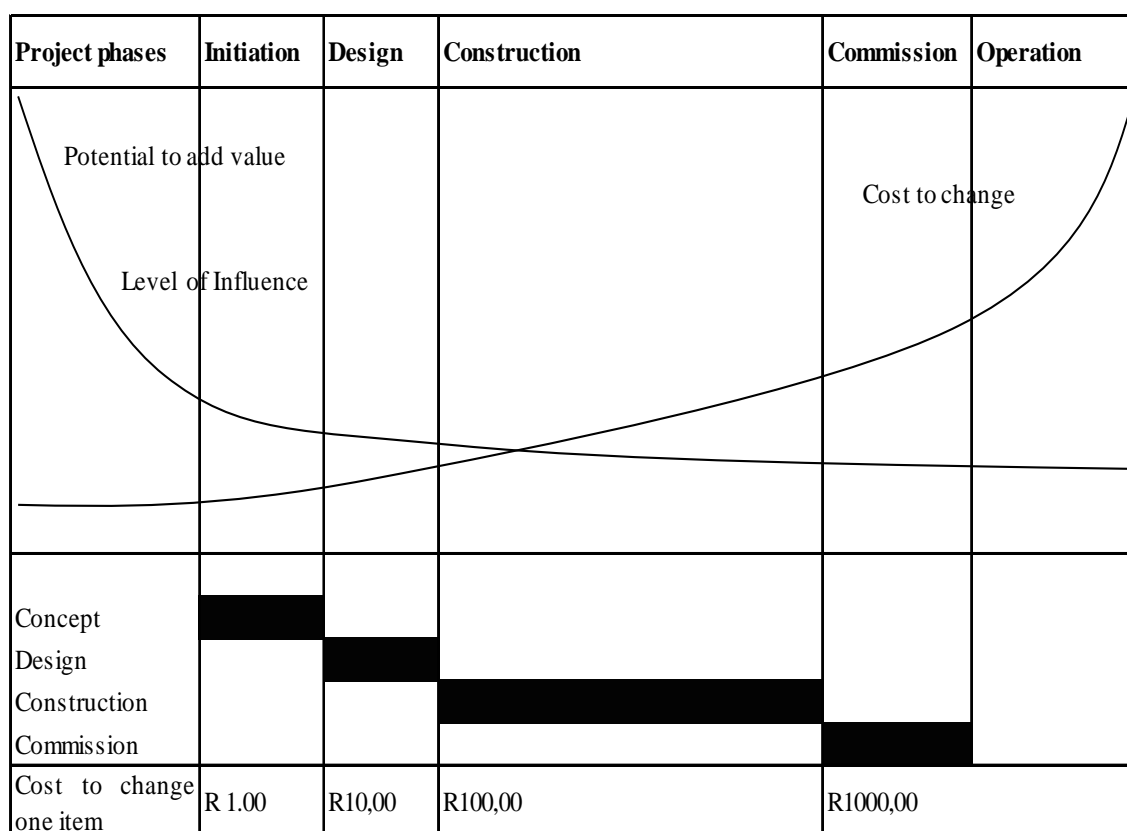
Projects within the construction industry vary in size, scope, time and cost which have distinctive features as cited by Burke (2007a: 16) which include:

- A start and finish, where the finish could be set on a specific date or phased out over a longer period;
- A lifecycle with a beginning and end with a number of distinct number of phases in between (initiation, planning, execution and closure) ;
- A budget with associated cash flows;
- Activities which are essential and non-repetitive;
- Use of different resources from different departments that require co-ordinating;
- Managed by a person with single point of responsibility, the PM, and

- Various team roles and relationships that are subject to change that needs to be developed, defined and established prior to the commencement of the project.

The initial phases of the project offer the greatest potential to add value and facilitate design or scope changes as any changes during the construction phases is more costly to accommodate as illustrated in Figure 2.14. The encouragement, according to Burke (2007a: 52), is to spend proportionally more time and effort during the initial phases to get the design right before implementation.

Figure 2.14: The potential to add value versus the cost of changes. (Burke 2007a:52)



2.4.1.3 Project Management Lifecycle versus Project Lifecycle

The project management lifecycle is a fundamental concept of project management according to the PMI and is not the same as the project lifecycle. According to Egan (2006: 4), the project lifecycle refers to the development phases that a project goes through which is determined by the nature of the project, i.e. the project lifecycle is project specific, while the project management lifecycle stays the same for all projects. Each phase of the project lifecycle is subject to the entire project management lifecycle as each phase within the project lifecycle can be seen as individual projects.

2.4.1.4 The Role of the Project Manager

The PM is the person who has the overall responsibility for the successful initiation, planning, design, execution, monitoring, controlling and closure of a project. He or she must have a combination of skills including an ability to ask penetrating questions, detect un-stated assumptions and resolve conflicts, including various other general management skills. The PM's role concisely is the overall responsibility for the successful planning, execution, monitoring, control and closure of a project, all with the support and backing of his or her organisation to the satisfaction of the client.

Those that excel as PMs realise they cannot do it all on their own. They recognise the importance of the collective team effort in getting results. They find and utilise the strengths in everyone and try to ensure that they allocate roles to those best placed to deliver. They learn to keep everyone motivated and pushing the boundaries to get results.

The role of the PM, according to Haughey (2011: 1), includes the following activities:

- Planning and defining scope;
- Activity planning and sequencing;
- Resource planning;
- Developing schedules;
- Time estimating;
- Cost estimating;
- Developing a budget;
- Documentation;
- Creating charts and schedules;
- Risk analysis;
- Managing risks and issues;
- Monitoring and reporting progress;
- Team leadership;
- Strategic influencing;
- Business partnering;
- Working with vendors;
- Scalability, interoperability and portability analysis;
- Controlling quality, and

- Benefits realisation.

Project management is a complex and demanding role. PMs often find themselves being pulled between keeping end users, clients, subordinates, team members and senior people happy. Given these demands, Brodie (2007: 1-2) elaborates as to what the best PMs do that makes them stand out from the crowd?

- Focus on solutions. Problem solving and breaking through constraints is an essential part of managing projects. Those that excel as PMs have a mind-set where they focus on finding solutions to problems. They keep asking themselves how they can overcome whatever barriers arise;
- Participative and decisive. All the best PMs understand the need to communicate and consult. They also know that lots of talking and procrastination achieves nothing. Finding the right balance between consulting, deciding and acting is what separates the best from the rest;
- Focus on clients. In every project, there are clients. They might be internal or external or a combination of both. The best PMs keep clients at the forefront of their mind. They listen effectively, take on board the feedback they are getting and look for ways of incorporating it whenever they can;
- Focus on win-win outcomes. In any project, there will be many stakeholders, all of whom will see their issues as being the most important. The challenge that the best PMs respond to is finding solutions that address the issues without compromising the overall project structure;
- Lead from the front. PMs need to lead by example. The example they set determines how the rest of the team behave and respond to the challenges that arise. Those PMs who want to encourage openness and honesty are open and honest themselves. Those that take risks and learn from their mistakes empower others to do the same;
- Adapt to what arises. PMs can set out the best plans in the world, think about the risks, put great tracking in place and even then the unexpected will show up from time to time. Adaptability is a key characteristic of the best PMs. View adaptability in projects similar to the flight path of an aircraft. It can be off course along the way but it needs to be right on target when it comes to landing, and
- Get the best out of everyone. Those that excel as PMs realise they cannot do it all on their own. They recognise the importance of the collective team effort in getting results. They find and utilise the strengths in everyone and try to ensure that they allocate roles to those best placed to deliver. They learn to keep everyone motivated and pushing the boundaries to get results.

2.4.1.5 What Project Management is Not

Godfrey (2010: 1) states: “Should one ask various PMs what project management is the first things that come to mind is phrases such as planning, frustration, failed plans, stress, backup plans, exhilaration, life changing, completion and relief.” Godfrey (2010: 1) describes project management as ‘herding cats’, which reflects the complexities involved in project management.

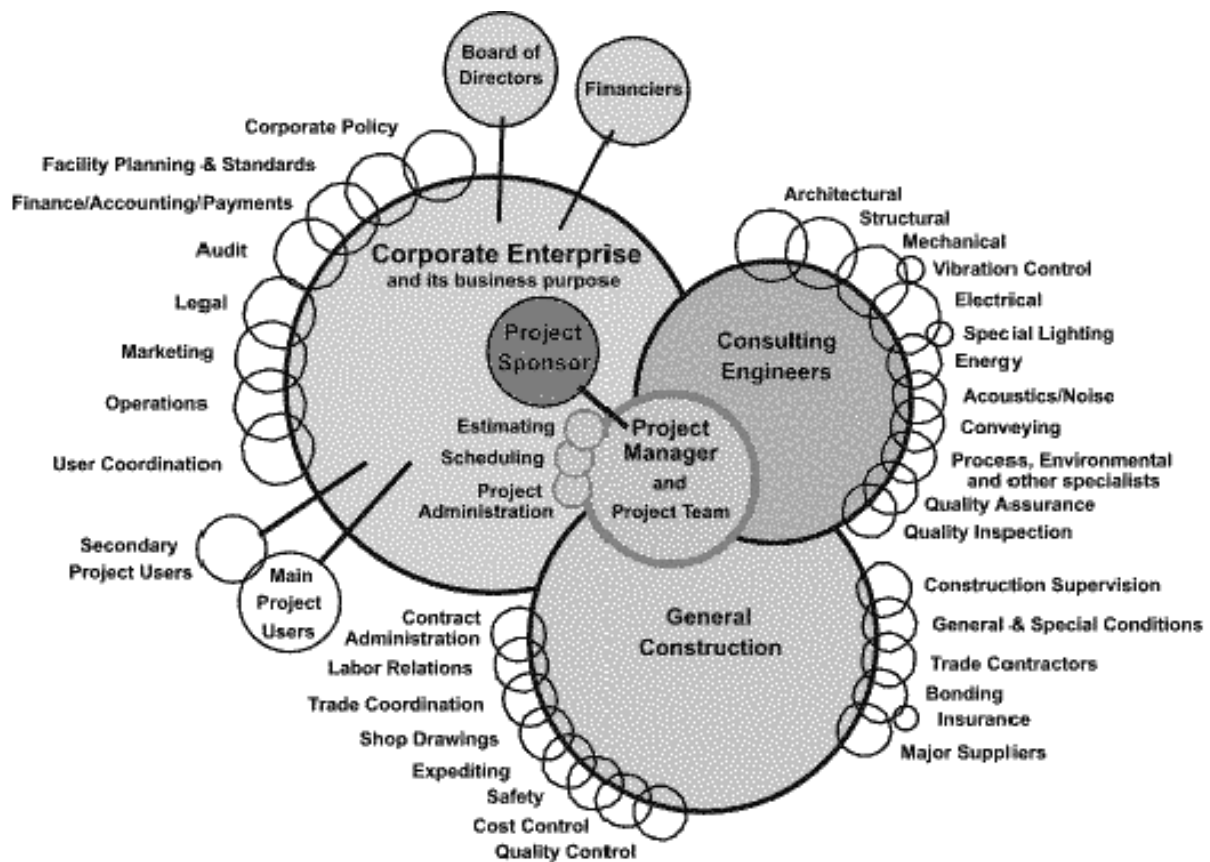
Godfrey (2010: 1 – 2) is of the opinion that it is easier to understand project management by knowing what it is not. Project management is not:

- An activity where a plan is created and watched as it plays out perfectly until the project has been completed. The best plans fail even when things seem straight forward there is always an unexpected turn of events that keep the project teams on their toes;
- Just following PMBOK's tools and techniques without looking carefully at what suits the project and the environment can get PMs into trouble too. The PMBOK is a collection of best practices that can help PMs deliver their projects, not a rule book;
- Loading up projects and people with meaningless process that hinders the work. Not every process needs to be used on every project. Certain processes must be followed. However, too much processes is often viewed as unnecessary work that prevents people from getting the work done that also causes delays;
- Being in control means being inside quality control limits. The best PMs according to Godfrey (2010: 2), lead, cajole, cheerlead and sometimes direct, but they are never dictators. Good PMs work in collaboration with their teams. Godfrey also cautions that any time the PM thinks he / she is in control the Universe will very clearly let him / her know with a twist in the project that the PM is not, and
- Just schedule tracking. Tracking the schedule is absolutely necessary to successfully delivering the project. The schedule is just an indicator of everything else that should be happening: communication, risk management and stakeholder management.

2.4.1.6 Project Management in Practice

Project management is described as a formalised and structured method for managing change in a rigorous manner. It is used to produce specifically defined deliverables, by a certain time to a defined quality, with a given level of resources, so that planned outcomes and benefits may be achieved.

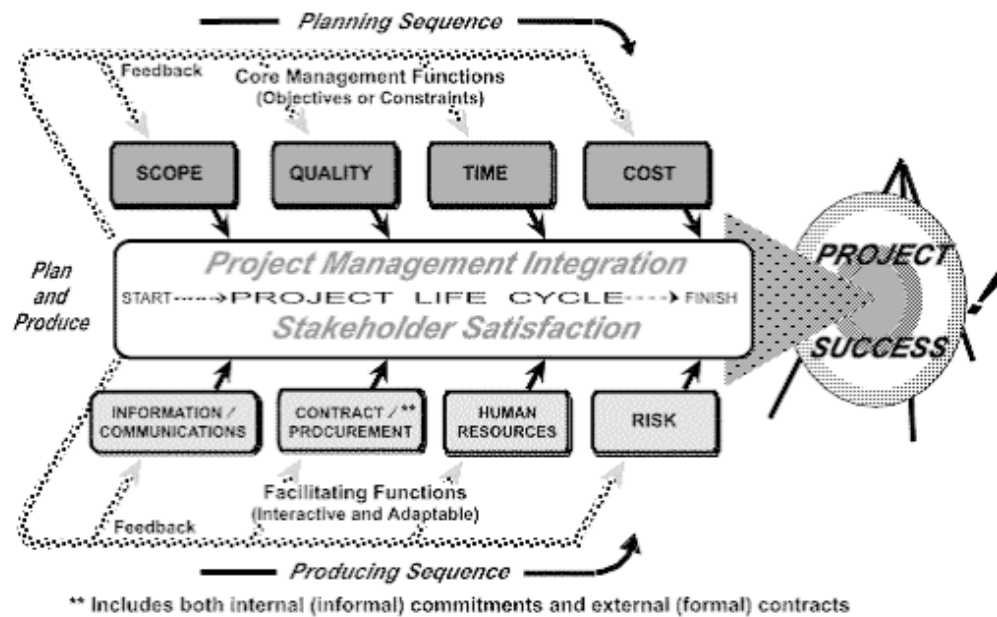
Figure 2.15: Construction project management in the corporate environment. (Wideman, 2003: 4)



Prior to the eighties most of the focus was on project team behaviour, with only limited attention given to the organisational environment (Wideman, 2003: 4). Figure 2.15 illustrates one of the earliest models of project management in the construction environment, which exemplifies the complexity of stakeholders involved or impacts on a building construction project of significant size, such as an office complex or tower. Note the central position of the PM and his/her team. Project management also involves project planning to incorporate specific work requirements of a predefined quantity and quality within the available resources and project monitoring through tracking progress, comparing actual outcome to predicted outcome, making adjustments when necessary and analysing the impact.

Wideman (2003: 10) also categorised the areas of knowledge within the PMBOK in four core objectives or constraints, as management functions: cost, scope, time and quality, and four interactive and adaptable management functions: risk, human resources, contract/procurement and information/communications. In addition, there is also the important element of integration, all of which must be managed to achieve project success. This complex relationship is illustrated in Figure 2.16.

Figure 2.16: Project management integration: The future of project management (Wideman, 2003: 10)



The PMBOK covers nine knowledge areas that incorporate forty-four separate management processes within five stages or process groups that include initiating, planning, executing, controlling and closing the project, as illustrated in Table 2.5. The knowledge areas are areas of expertise or specialisation required by the PM to manage projects successfully. In order to understand project management according to the PMI, it is necessary to understand the boundaries between project management lifecycle stages and to know what management activities, called processes are included within each of the stages, called process groups. The PMBOK is not set out in the logical sequence of the processes, as they would occur in a project, which is why the terms are often confused.

The PMI (2004: 6) defines project management as the application of knowledge, skills, tools and techniques to project activities to meet project requirements, through the processes of initiating, planning, executing, controlling and closing out the project. Project management, according to Burke (2007a: 18), is “the process of integrating everything that needs to be done using a number of project management techniques as the project evolves through its lifecycle in order to meet the project’s objectives and the stakeholders’ needs and expectations.

Burke (2007a: 23) refers to the four core elements of cost, scope, time, and quality, as the elements, which determine the deliverable objectives of the project while communication, procurement and contract administration, human resources and risk management provide the means of achieving the deliverable objectives through integration.

Table 2.5: PMBOK knowledge areas, process groups and management processes (Egan, 2006: 6)

Knowledge Area	Process Groups and Management Processes				
	Initiating	Planning	Executing	Controlling	Close
Project integration management	<ul style="list-style-type: none"> • Develop Project Charter • Develop Preliminary Project Scope Statement 	<ul style="list-style-type: none"> • Develop Project Management Plan 	<ul style="list-style-type: none"> • Direct and Manage Project Execution 	<ul style="list-style-type: none"> • Monitor and Control Work • Integrated Change Control 	<ul style="list-style-type: none"> • Close Project
Project scope management		<ul style="list-style-type: none"> • Scope Planning • Scope Definition • Create WBS 		<ul style="list-style-type: none"> • Scope Verification • Scope Control 	
Project time management		<ul style="list-style-type: none"> • Activity Definition • Activity Sequencing 		<ul style="list-style-type: none"> • Schedule Control 	
Project cost management		<ul style="list-style-type: none"> • Cost Estimating • Cost Budgeting 		<ul style="list-style-type: none"> • Cost Control 	
Project quality management		<ul style="list-style-type: none"> • Quality Planning 	<ul style="list-style-type: none"> • Perform Quality Assurance 	<ul style="list-style-type: none"> • Perform Quality Control 	
Project HR management		<ul style="list-style-type: none"> • Human Resource Planning 	<ul style="list-style-type: none"> • Acquire Project Team • Develop Project Team 	<ul style="list-style-type: none"> • Manage Project Team 	
Project communications management		<ul style="list-style-type: none"> • Communications Planning 	<ul style="list-style-type: none"> • Information Distribution 	<ul style="list-style-type: none"> • Performance Reporting • Manage Stakeholders 	
Project risk management		<ul style="list-style-type: none"> • Risk Management Planning • Risk Identification • Qualitative Risk Analysis • Quantitative Risk Analysis • Risk Response planning 		<ul style="list-style-type: none"> • Risk Monitoring and Control 	
Project procurement management		<ul style="list-style-type: none"> • Plan Purchase and Acquisitions • Plan Contracting 	<ul style="list-style-type: none"> • Request Seller Responses • Select Seller 	<ul style="list-style-type: none"> • Contract Administration 	<ul style="list-style-type: none"> • Contract Closure

2.4.1.7 The Aims and Objectives of Project Management

Kerzner (2009: 1-4) states that problems facing project management are increasingly multifaceted. All projects have three things in common, they involve uncertainty, they involve risks and they involve three different and opposing commitments: completion dates, budgets and

scope of work with the added variable of client expectations and satisfaction. In today's environment however, PMs' directives are increasingly complex and ambiguous as PMs have to contend with a greater degree of organisational politics, external environmental or marketing pressures and the needs of individuals inside and outside the organisation that influence the project. Potential benefits from project management according to Kerzner (2009: 4), include:

- The identification of functional responsibilities to ensure that all activities are accounted for, regardless of personnel turnover;
- Minimising the need for continuous reporting;
- Identification of time limits for scheduling;
- Identification of methodology for trade-off analysis;
- Measurement of accomplishment against plans;
- Early identification of problems so that corrective action may follow;
- Improved estimating capacity for future planning, and
- Knowing when objectives cannot be met or will be exceeded.

Unfortunately, according to Kerzner (2009: 4), the benefits cannot be achieved without overcoming obstacles such as project complexity, client's special requirements, project risks, forward planning and estimating, and organisational support.

2.4.2 ORGANISATIONAL COMPETENCIES AND EXPECTATIONS

The concept of organisational competencies, according to Coates (2008: 2), is one of the most misunderstood and misapplied concepts in organisational management. Organisational competencies are often thought to be simply employee skills rather than the compelling cross organisation core competencies that drive integrated business execution and management alignment.

Organisational competency is a term routinely used by human resource professionals and by organisational change consultants to refer to the universe of employee skills that the organisation must have in order to achieve its mission. Coates (2008: 4) defines organisational competencies as the combination of required physical skills, necessary information available or degree of dissemination, appropriate performance measures of the actual organisation itself and the right corporate culture that the organisation require to achieve its mission. Coates (2008: 4) also advocates that competencies is more important than strategic goals as most organisations manage implementation of their strategic goals by having each department or part of the

business to create operating plans that describe how they will support each goal. Effective implementation of competencies is, in the final analysis, more important than strategic goals.

Coates (2008: 5) argues that the management of organisational competencies and the 'organisational competency gap' is critical to ensuring that the organisation's systemic risk level does not increase. While many organisations have systems in place to identify 'competency gaps' e.g. missing skills, it is only the organisations that are able to see competencies as transcending skills that are able to manage operational risk in a systemic manner. Once the organisation has a clear understanding of its required organisational competencies, management can then dissect them to determine what combination of employees, skills, processes, systems, facilities, partnerships and so forth are necessary to maintain.

Managing to organisational competencies, according to Coates (2008: 5-7), ensures that strategic goals and departmental programmes and priorities are aligned across the organisation in support of key drivers of business success. If organisational competencies are used systemically through the business to drive decisions about strategy execution and allocation of resources, the consequence is a culture that fosters clear alignment of the team around those competencies that are critical for the organisation's success. When the strategic operating environment changes, as it inevitably will, the organisation is better prepared to reprioritise programmes and projects to maintain a grounded alignment with the things necessary to support the competencies that build on-going operating success. With a focus only on strategic goals, the organisation is more likely to adapt to changes in the environment with new objectives driven by different parts of the business and not aligned with the overarching requirements of cross-corporate competencies for success.

Frame (1999: 31-42) lists a number of organisational pathologies: contending stakeholder interests; decision makers who serve their personal interests at the expense of the organisation's interests; dysfunctional organisational cultures; poor measurement and evaluation procedures of performance appraisals; clueless managers and top management; lack of support for basic operations; corruption and greed, and general incompetence. Frame also states that any organisation that suffers from some of the pathologies described cannot expect to excel. To achieve competence they must first recognise the pathologies from which they suffer then they must take steps to remedy them. Only then can they seriously consider what steps should be taken to achieve high levels of competence. Crawford (1999: 1) maintains that project competence involves an active partnership between people and organisations. Frame (1999: 182)

argues that organisations demonstrate organisational competence when they create an environment that supports employees in doing the best job possible.

2.4.2.1 The Competency Dilemma

Organisations as an entity, teams and individuals within organisations have various abilities to perform their daily work. Frame (1999: 12) defines the competence dilemma as being “... although our hearts tell us that the people with whom we work in our organisations should be treated as equals, our heads tell us that in the realm of work they are not equals.” Frame also maintains that those who add most value are a small fraction of the workforce. When it comes to competence, the 80-20 rule appears to hold, according to Frame (1999: 12). This implies that 20% of the employees of an organisation contribute 80% of the value created by the organisation. The success of an organisation typically rests on the efforts of a small core of the workforce.

Frame (1999: 12) states: “It is this competence dilemma which created a situation that makes it difficult to address the issue of competence in an unemotional way, and although social and political perspectives may promote the view that people are equal, economics, the dismal science, suggests that people are different and will be rewarded for their efforts unequally.” This competence dilemma then often leads to resentment and animosity within the NDPW towards individuals, amongst peers, amongst divisions and towards the organisation itself.

No project can run in isolation. This often-quoted statement within the NDPW suggests that no project can be initiated, developed, implemented and finalised by any organisation without considering other organisational policies, processes and objectives, especially the human side of projects. The NDPW might be able to achieve project success on one or two projects, but if the majority of projects of a particular programme fail, the whole organisation is pronounced to be ineffective and inefficient, and in the worst case, be branded as being very incompetent.

Kerzner (2009: 7-9) advocates that “a PM must not only be able to manage the engineering, procurement and construction aspects of a project, but must also be able to manage aspects relating to finance, cost, environmental considerations, statutory requirements, inflation and cost escalations, labour problems, public and client relations and changing laws.”

Ledesma (2010: 1) argues that it is common for organisations to think project management is a skill at the position level and that it is just for PMs. The reality is that project management is an

organisational competency. If organisational strategy drives strategic changes and those changes are executed as projects, project management must be an organisational capability rather than a job skill. It is thus a prerequisite for project implementing organisations to define a training programme within the organisation to develop everyone's project management knowledge and abilities and not only that of the PMs. Haughey (2011: 1) adds that in order for a PM to be successful, senior management must give a PM sufficient support and authority that will enable the PM to manage the project team and the project effectively and sufficiently.

2.4.2.2 Individual Competencies

Burke (2007a: 328) states that it is favourable if the PM is also a technical expert as they will then know and understand the technical issues of the project and will consequently be in a better position to apply judgement and foresee problems. A good PM, and in a sense a good public manager, should have the skills in visible leadership in a complex multi-disciplinary organisation with a political context and must be able to challenge the status quo. They must also have the appropriate technical knowledge or the experience to know when and how to use the technical experts.

Some say the best PMs exhibit extraordinary energy levels, phenomenal political skills and an absolute obsession with results. Crawford (2010: 1) agrees that these characteristics are probably the most common however PMs must have a combination of skills including an ability to ask penetrating questions, detect un-stated assumptions and needs, and resolve conflicts, as well as more general management skills. Crawford (2010: 2) adds that among the PM's duties it is important to recognise that risk directly impacts on the likelihood of success and that this risk must be both formally and informally measured throughout the lifetime of the project.

Müller and Turner (2010: 437) argue that the leadership competency profiles of successful PMs include strong critical thinking, i.e. intellectual competencies, management quality competencies, and conscientiousness i.e. emotional competencies. Müller and Turner (2010: 446) also advocate that leadership competencies should be taken into account when assigning PMs to projects, and that PM training and development should focus not only on technical and management skills, but also on development of leadership competencies.

Dulewicz and Higgs (2005 cited by Müller and Turner, 2010: 447–448) summarise the fifteen-competency dimensions PMs should have under intellectual-, managerial-, and emotional competencies:

- Intellectual competencies:
 - Critical analysis and judgment. The leader gathers relevant information from a wide range of sources, probing the facts, identifying advantages and disadvantages. Sound judgments and decisions making, awareness of the impact of any assumptions made;
 - Vision and imagination. The leader is imaginative and innovative. He or she has a clear vision of the future and foresee the impact of changes on implementation issues and business realities, and
 - Strategic perspective. The leader is aware of the wider issues and broader implications. He or she balances short and long-term considerations and identifies opportunities and threats.
- Managerial competencies:
 - Resource management. The leader organises resources and co-ordinates them efficiently and effectively. He or she establishes clear objectives and converts long-term goals into action plans;
 - Engaging communication. The leader engages others and wins their support through communication tailored for each audience. He or she is approachable and accessible;
 - Empowering. The leader gives direct reports autonomy and encourages them to take on challenges, to solve problems and develop their own accountability;
 - Developing. The leader encourages others to take on ever more-demanding tasks, roles and accountabilities. He or she develops others' competencies and invests time and effort in coaching them, and
 - Achieving. The leader shows an unwavering determination to achieve objectives and implement decisions.
- Emotional competencies:
 - Self-awareness. The leader is aware of his or her own feelings and able to recognise and control them;
 - Emotional resilience. The leader is able to maintain consistent performance in a range of situations. He or she retains focus on a course of action or the need to obtain certain results in the face of personal challenge or criticism;
 - Intuitiveness. The leader arrives at clear decisions and is able to drive their implementation in the face of incomplete or ambiguous information by using both rational and emotional perceptions;
 - Interpersonal sensitivity. The leader is aware of, and takes account of, the needs and perceptions of others in arriving at decisions and proposing solutions to problems and challenges;

- Influence. The leader can persuade others to change a viewpoint based on the understanding of their position and the recognition of the need to listen to this perspective and provide a rationale for change;
- Motivation. The leader has the drive and energy to achieve clear results and make an impact, and
- Conscientiousness. The leader displays clear commitment to a course of action in the face of challenge and matches ‘words and deeds’ in encouraging others to support the chosen direction.

Toney (n.d. cited by Bigelow, 2008: 1) reports on project management best practices where a study of the ‘Top five hundred - project management - benchmarking forum’ identified traits of the best practicing PMs. According to this study, the best PMs:

- Are recognised by stakeholders as the single most important factor in project goal achievement;
- Are truthful in all dealings and relationships;
- Exhibit eagerness to organise and lead groups;
- Exhibit evidence of a strong desire for goal achievement;
- Are even-tempered;
- Have faith that the future will have a positive outcome, and
- Have confidence their personal performance will result in a positive outcome.

These champions bring a ‘can-do’ structure and discipline to organisations, helping them transform informal processes into a project management culture and force as long as they have top management’s support.

A good PM possesses skills, talent, and breadth of experience. However, what makes a good PM one of the best? There appears to be some common threads woven into the personalities of successful PMs according to Crawford’s (2010: 1) article ‘What makes a good PM’ that is based on her research on various successful projects:

- Love of their work and embracing the challenges;
- Clear vision and communicating this vision;
- Strong team building skills and setting positive tones;
- Structure and alignment creating the environment and direction;
- Strong interpersonal skills, listening to and leading their teams;
- Discipline completing each phase of the project properly, and

- Communication skills knowing when and to whom to communicate.

Barry (2010: 1-3) lists the top ten qualities of a PM in order of importance:

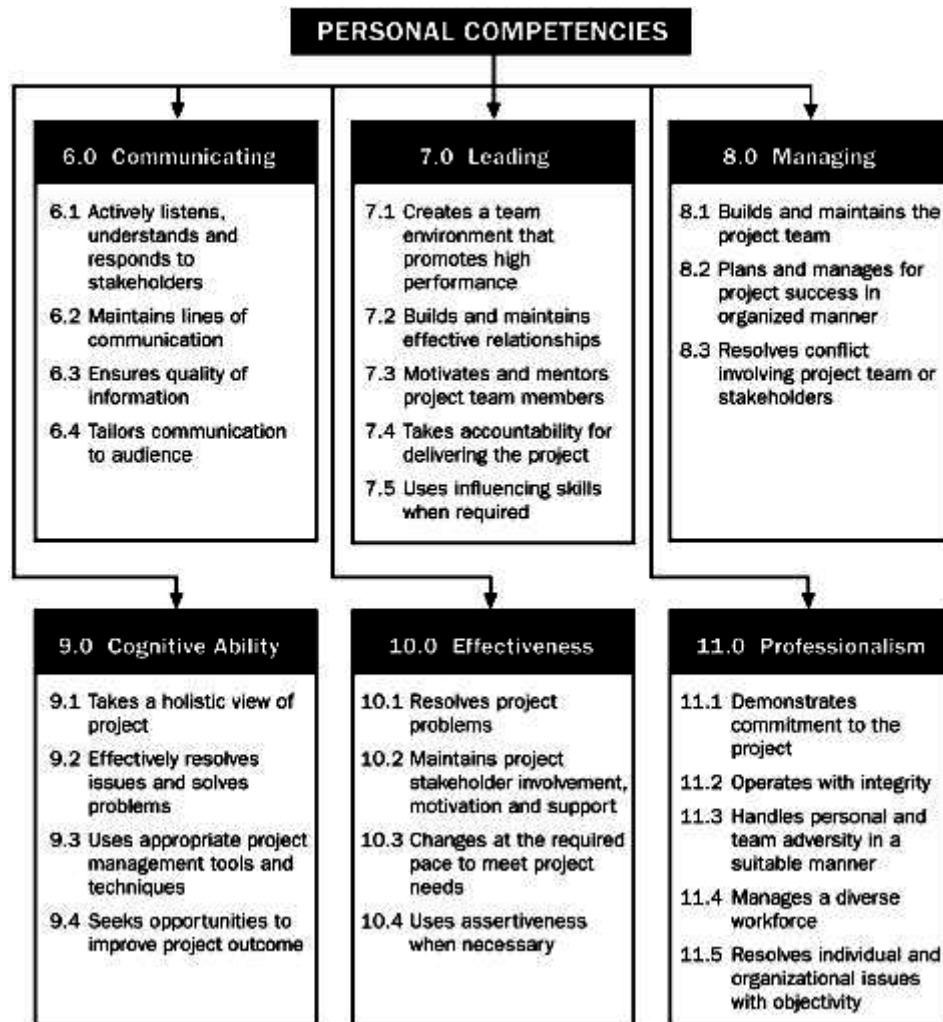
- Inspires a shared vision. An effective project leader is often described as having a vision of where to go and the ability to articulate it. Visionaries thrive on change and being able to draw new boundaries. Visionary leaders enable people to feel they have a real stake in the project. They empower people to experience the vision on their own;
- Good communicator. The ability to communicate with people at all levels is usually named as the second most important skill by PMs and team members. Project leadership calls for clear communication about goals, responsibility, performance, expectations and feedback. There is a great deal of value placed on openness and directness. The project leader is also the team's link to the larger organisation. The leader must have the ability to effectively negotiate and use persuasion when necessary to ensure the success of the team and project. Through effective communication, project leaders support individual and team achievements by creating explicit guidelines for accomplishing results and for the career advancement of team members;
- Integrity. One of the most important things a project leader must remember is that his or her actions, and not words, set the modus operandi for the team. Good leadership demands commitment to, and demonstration of, ethical practices. Leadership motivated by self-interest does not serve the wellbeing of the team. Leadership based on integrity represents nothing less than a set of values others share, behaviour consistent with values and dedication to honesty with self and team members. In other words the leader 'walks the talk' and in the process earns trust;
- Enthusiasm. People are not fond of leaders who are negative and rather prefer leaders that are enthusiastic, with a bounce in their step, with a can-do attitude. Team members want to believe that they are part of an invigorating journey. People tend to follow people with a can-do attitude, not those who give 200 reasons why something cannot be done. Enthusiastic leaders are committed to their goals and express this commitment through optimism. Leadership emerges as someone expresses such confident commitment to a project that others want to share his or her optimistic expectations. Enthusiasm is contagious and effective leaders know it;
- Empathy. What is the difference between empathy and sympathy? Although the words are similar, they are, in fact, mutually exclusive. According to Norman Paul, in sympathy the subject is principally absorbed in his or her own feelings as they are projected into the object and has little concern for the reality and validity of the object's special experience. Empathy,

on the other hand, presupposes the existence of the object as a separate individual, entitled to his or her own feelings, ideas and emotional history (Paul, 1970). “It is nice when a project leader acknowledges that we all have a life outside of work.”

- **Competence.** Simply put, to enlist in another's cause, the project team members must believe that that project leader knows what he or she is doing. Leadership competence does not however necessarily refer to the project leader's technical abilities in the core technology of the business. As project management continues to be recognised as a field in and of itself, project leaders will be chosen based on their ability to successfully lead others rather than on technical expertise, as in the past. Having a winning track record is the surest way to be considered competent. Expertise in leadership skills is another dimension in competence. The ability to challenge, inspire, enable, model and encourage must be demonstrated if leaders are to be seen as capable and competent;
- **Ability to delegate tasks.** Trust is an essential element in the relationship of a project leader and his or her team. Managers demonstrate their trust in others through their own actions - how much they check and control their work, how much is delegated delegate and how much people are allowed to participate. Individuals who are unable to trust other people often fail as leaders and forever remain little more than micro-managers, or end up doing all of the work themselves;
- **Cool under pressure.** In a perfect world, projects would be delivered on time, under budget and with no major problems or obstacles to overcome. A leader with a hardy attitude will take these problems in stride. “Out of the uncertainty and chaos of change, leaders rise up and articulate a new image of the future that pulls the project together.” (Bennis 1997) When leaders encounter a stressful event, they consider it interesting, they feel they can influence the outcome and they see it as an opportunity;
- **Team-building skills.** A team builder can best be defined as a strong person who provides the substance that holds the team together in common purpose toward the right objective. In order for a team to progress from a group of strangers to a single cohesive unit, the leader must understand the process and dynamics required for this transformation. He or she must also know the appropriate leadership style to use during each stage of team development. The leader must also have an understanding of the different team players styles and how to capitalise on each at the proper time, for the problem at hand, and
- **Problem solving skills.** Although an effective leader is said to share problem-solving responsibilities with the team, it is expected from the project leaders to have excellent problem-solving skills themselves. They have a fresh, creative response to here-and-now opportunities, and not much concern with how others have performed them.

Yeong (2012: 17) summarises the required PM personal competencies in Figure 2.17.

Figure 2.17: Yeong's personal PM competencies (Yeong, 2012: 17)



Regardless of the organisation's particular work management methodology or business project management, Kissel (2010: 1-3) is of the opinion that PMs must take time to foster the following skills and attributes:

- The gift of foresight. PMs should be able to make reasonable predictions based upon practical assumptions;
- Organisation. Keeping information, schedules and team members organised is critical. Fortunately, most PMs are very organised and detail-oriented people;
- The ability to lead. Although there are some people who are natural leaders, basic leadership skills can be learned, practiced and improved. Leadership and people skills are, at the very least, as important as methodology and tracking tools;

- Exceptional communication skills. It is important to be able to communicate with everyone involved in the project from peers, to team members and stakeholders. Everyone needs different information couched in different terms. This is a skill that is vital to a PM's success;
- Pragmatism. A pragmatic approach to problem-solving is a skill that is essential for a discipline that faces the regular adjustments and changes that face PMs, and
- Empathy. In order to lead people, PMs need to understand them and what motivates them. Everyone is different and a one-size-fits-all approach to leadership is seldom the most successful approach.

Duncan's (2010: 1-8) project management partner competency model was developed from the observable behaviours of successful, professional PMs in a variety of application areas. It provides a consistent, coherent structure for assessing the capabilities of current and prospective PMs that can be used to:

- Develop a training needs assessment to help optimise the use of scarce training resources by identifying gaps between job requirements and incumbent skill levels;
- Perform individual competency assessments to evaluate current PMs or to screen prospective PMs, and
- Conduct an organisation-wide competency assessment to ensure that the most skilled PMs are assigned to the most critical projects.

Duncan (2010: 1-8) identified nearly one hundred observable behaviours grouped into thirteen discrete competencies:

- Leadership means motivating and inspiring people to keep the project moving toward successful completion even in the face of the physical demands of aggressive project schedules and the emotional demands of discouraging developments. Successful PMs:
 - Have people volunteering for their projects;
 - Establish and communicate their vision for the project;
 - Speak of 'our project' rather than 'this project';
 - Exhibit a 'can do' response to problems, and
 - Demonstrate a positive attitude.
- Client relations involve managing the interactions between the client and the rest of the project team. When the client is external to the performing organisation, it also involves managing the interactions between the client and the performing organisation. The result of

good client relations is that both parties are enthusiastic about both the relationship.

Successful PMs:

- Work to understand the client's point of view;
 - Advocate appropriately for the client to others;
 - Advocate appropriately for others to the client;
 - Are accessible, available, and responsive to the client;
 - Seek client feedback about project performance;
 - Create mutual interest in repeat business, and
 - Show respect for the client at all times.
- Project planning means devising and maintaining a workable scheme to accomplish the need that the project was undertaken to address. Successful PMs:
 - Develop written plans for all significant undertakings;
 - Document and distribute the project plan;
 - Update and revise the project plan as needed;
 - Insist on clear, complete statements of both product and project scope;
 - Know what the project will really cost, how long it will really take;
 - Use available planning tools effectively, and
 - Get the team actively involved in the planning effort.
 - Performance measurement involves collecting and analysing project information to determine where the project stands and to predict future status and progress. Successful PMs:
 - Actively monitor project status;
 - Insist on constructive analyses of variance;
 - Use the plan to manage the project;
 - Hold regular status review meetings;
 - Encourage an attitude of no surprises;
 - Measure and report on performance against what was planned, and
 - Submit status reports on time.
 - Communicating is the exchange of information. The sender must make the information clear and unambiguous. The receiver must make sure the information is complete and understood. Communicating has many dimensions: written and oral; listening and speaking; internal and external; formal and informal; vertical and horizontal. Successful PMs:
 - Send clear messages;
 - Choose the form and timing of the message for their audience;

- Create communications that look professional;
- Use language carefully;
- Confirm the accuracy of information sent and received;
- Explain things well, and
- Listen carefully to others.
- Organisational effectiveness is the ability to get things done. It requires an understanding of the formal and informal structures of all the organisations involved. Successful PMs:
 - Know who to go to for help;
 - Win approval of requests for support;
 - Show respect for individuals regardless of position;
 - Maintain a network of contacts from whom to get assistance, and
 - Know which resources are scarcest and manage them most carefully.
- Team Building. A team is a group of individuals who depend on each other for success. Team building means encouraging and enabling people to work together as a team to accomplish the project. Successful PMs:
 - Define the team to include all the stakeholders;
 - Share management responsibilities with the team;
 - Talk about process as well as results;
 - Work hard to achieve consensus on all major decisions;
 - Insist on the best the team can do;
 - Call attention to team achievements;
 - Develop good team players, and
 - Build teams that perceive themselves as teams.
- Staff development is the process of encouraging personal and professional growth among the members of the project team. It includes training the replacement as well as encouraging growth in an individual's chosen functional area. Successful PMs:
 - Insist on the best that each individual can do;
 - Demonstrate knowledge of team members' personal and professional goals;
 - Value the individual's growth and achievements;
 - Give credit promptly and sincerely;
 - Provide constructive criticism promptly and in private;
 - Provide timely and useful performance reviews, and
 - Delegate appropriately for the person and the situation.

- Having perspective is the ability to elevate ones view; to take a broader organisational view rather than a narrower project or personal view; to discern how the project relates to a hierarchy of larger undertakings; to sense and assess potential interactions with outside conditions and events; to connect seemingly unrelated events or conditions to the project.
Successful PMs:
 - Demonstrate awareness of the organisation's vision and mission;
 - Demonstrate awareness of competitors' strengths and weaknesses;
 - Encourage the team to consider 'big picture' issues;
 - Avoid getting immersed in unnecessary detail;
 - Actively seek to acquire new knowledge, and
 - Read widely.
- Negotiating means working with others in order to reach an agreement. A successful negotiation is one where all parties are satisfied with the agreement. Successful PMs:
 - Advocate for interests rather than positions;
 - Seek agreements that satisfy the interests of both parties;
 - Work to keep personalities out of the negotiations;
 - Are open to innovative and creative solutions;
 - Use objective criteria to evaluate proposed agreements;
 - Negotiate agreements that can be kept, and
 - Negotiate agreements that preserve the working relationship.
- Risk management means identifying, analysing, and responding to risks over the course of the project. It includes both minimising the consequences of adverse events and maximising the results of positive events. Successful PMs:
 - Consider both the impact and likelihood of risks;
 - Use contingency and management reserves appropriately;
 - Distinguish between risks in the future and problems in the present;
 - Take prudent risks and exploit unexpected opportunities, and
 - View past problems as current risks and plan for them.
- Problem solving is a combination of problem identification, solution assessment in terms of what can be done, and implementing a solution. Project problems may be technical, managerial, or interpersonal. Problem solving may lead to decision making when a problem has many possible solutions. Successful PMs:
 - Use a structured approach for all significant problems;
 - Look for root causes, not just symptoms;

- Seek and listen to both facts and opinions;
 - Encourage innovative and creative solutions;
 - Involve the team in problem solving;
 - Ask perceptive questions, and
 - Follow up to ensure that the problem remains solved.
- Decision making means making the best choice from among many alternatives. Decisions can be ‘gotten’ from the client, from the team or from other managers as well as made. Decision-making has a time element to it the ‘best’ alternative may not be the ‘right’ decision if it is made too early or too late. Successful PMs:
 - Use a structured approach for all significant decisions;
 - Seek and listen to both facts and opinions;
 - Make decisions when needed;
 - Document important decisions;
 - Delegate or escalate decisions when appropriate, and
 - Follow up to ensure decision was implemented.

Duncan (2010: 1) adds that although all thirteen competencies are useful on most projects most of the time, the relative importance of each may vary. For example:

- Risk management may be more important when the core technology is unproven;
- Perspective may be more important in a large organisation, and
- Project planning may be more important when stakeholder needs are in conflict.

Kissel (2010: 3) argues that great PMs who are good leaders understand that successfully leading people is half the battle to successfully managing a project.

2.4.2.3 Project Team Competence

The ideal project team completes the job in time, within budget with no or very little scope changes and to the satisfaction of all stakeholders. However, teams must be matched up to perform at their optimum capabilities, utilising the diversity within the team to gain advantage. A strong team needs little management while a misaligned or weak team require more management and reduces the chances of project success.

Gray and Larson (2006: 344) list a number of characteristics commonly associated with high-performing teams that exhibit positive synergy:

- The team shares a sense of common purpose, and each member is willing to work toward achieving project objectives;
- The team identifies individual talents and expertise and uses them to their advantage as required by the project at the time;
- Roles are balanced and shared to facilitate both the accomplishment of tasks and feelings of group cohesion and morale;
- The team exerts energy toward problem solving rather than allowing itself to be drained by interpersonal issues or competitive struggles;
- Differences of opinion are encouraged and freely expressed;
- Risk taking and creativity is encouraged and mistakes are treated as opportunities for learning rather than reasons for punishment;
- Members set high personal standards of performance and encourage each other to realise the objectives of the project, and
- Members identify with the team and consider it an important source of both professional and personal growth.

High-performing teams become champions, create break-through products, exceed client expectations and get the project done ahead of schedule and under budget according to Gray and Larson (2006: 344). They are bonded together by mutual independency and a common goal or vision. There are high levels of trust and collaboration.

2.4.2.4 Organisational Competence

Du Plessis and Hoole (2006: 37) argue that culture is part of the overall organisational design to enable widespread information flow and allude to the fact that the relationship that exists between management and employees forms the organisation's culture. Organisational culture refers to a system of shared norms, beliefs, values, and assumptions, which binds people together, thereby creating shared meanings. This system, according to Gray and Larson (2006: 73), is manifested by customs, norms, and habits that exemplify the values and beliefs of the organisation. Culture reflects the personality of the organisation that enables one to predict attitudes and behaviours of organisational members.

Du Plessis and Hoole (2006: 39), and Gray and Larson (2006: 73) identified the following elements of project management culture within project competent organisations:

- Interpersonal relationships. The degree of understanding each other, and to which relationships are nurtured between team members, clients and suppliers are playing an important role in the success of the project;
- Team emphasis. The degree to which people participate in the management of the project and work activities are organised around groups rather than individuals;
- Management / stakeholder commitment. The degree to which each stakeholder including management commits, by means of active participation and support, to the successful completion of the project;
- Interdependence. The degree to which units within the organisation are encouraged to operate in a coordinated or interdependent manner;
- Control / discipline. The degree to which rules, policies, and direct supervision are used to oversee and control employee behaviour;
- Risk orientation. The degree to which the project environment encourages participants to be aggressive, innovative, and risk-seeking for success;
- Learning. The degree to which projects are viewed as learning interventions and processes of continuous improvement;
- Conflict tolerance. The degree to which employees are encouraged to air conflicts and criticisms openly and deal with it responsibly;
- Results orientation. The degree to which management and team members focus on achievement of results and outcomes, rather on the means. The degree to which status in the organisation becomes less dependent on the organisational role held and more on the results one is able to accomplish, both individually and as a team;
- Open-system focus. The degree to which the organisation and people involved monitor and respond to changes in the external environment, and
- Open communication. The degree to which shareholders communicate openly and share information about the project, its problems, opportunities, successes and failures.

One of the main causes of project failure, according to Gray and Larson (2006: 77-80), is that the organisational culture in which projects have to be delivered is not supportive of the project management methodology and the projects. The creation of a supportive organisational culture is critical for the success of any project and ultimately the growth of the business.

Du Plessis and Hoole (2006: 38) advocate that the project culture be often at odds with the organisational culture in many organisations. They further differentiate between the organisational culture of the parent organisation, its sub-cultures, and the culture within the

projects division to meet its objectives. However, according to Du Plessis and Hoole (2006: 38): “Project management should not be used until the leaders of the organisation are committed to its use and are willing to prepare a suitable culture for project management to germinate and grow.”

A project-competent organisation, according to Frame (1999: 9), is an organisation that supports their workers in carrying out their jobs as effectively and efficiently as possible. He further states that organisations do this by creating an environment that encourages collaboration, by supplying their workers with the resources necessary to operate effectively and by sustaining an infrastructure that offers their employees the information and supporting internal services to do their jobs properly.

Frame (1999: 182) maintains that competent organisations provide their workers with the following:

- Clearly defined and well-formulated procedures for performing work. A good approach is to emphasise procedures according to the project phases;
- Access to information needed to perform work effectively such as budget data, order processing data, schedule data, data on human and material resource availability, inventory data, and historical data of previous projects;
- Sufficient quantities of qualified human and material resources;
- Opportunities for training and education;
- Clearly defined visions of where the organisation is headed. The full understanding thereof will drive all of the organisation’s operations from top to bottom;
- A culture of openness, and
- Institutionalisation of project management require the organisation to provide administrative support, offer project management consulting and mentoring services to the organisation, develop and maintain standards and methods and provide project management training.

Organisations that are progressing down the path of becoming project based often find they need to co-ordinate their efforts across divisions or departments in order to achieve the real business benefits of effective project management. Typically, there is a need for co-ordination at three levels of the organisation – organisation executives or senior functional managers, project or programme managers, and project support personnel according to ESI International (2007: 3), as illustrated in Table 2.6.

Table 2.6: The three levels of co-ordination required to achieve project management excellence
(ESI International, 2007: 1-3)

Co-ordination group	Membership	Roles and Responsibilities
Project or programme management steering group	Organisation executives or senior functional managers	Create or change policies enabling project management i.e. project management office, career paths, and incentives; Determine budgets for project management improvement initiatives; Co-ordinate shared resources if appropriate; Share information on strategic direction in division/department and impact it will have on project management, and Establish project performance goals and metrics.
Project or programme management council	Project or programme managers	Share best practices in using tools, templates, and methodologies; Share information on specific projects, clients, and subcontractors; Evaluate and accept changes to project management processes, and Co-ordinate shared resources if appropriate - Prioritise project management improvement efforts for steering group.
Project management processes and support	Project support personnel, possibly from a PMO / PSO	Co-ordinate methods for communicating project management standard processes and tools across the organisation; Share information on methods for gathering and tracking project performance data; Share methods for gathering feedback from project personnel on processes and tools, likes and dislikes, and needs, and Co-ordinate requests and requirements for new project management tools.

Kerzner (2009: 93) defines a competent organisation as being groups of people who coordinate their activities in order to meet the organisational objectives. This requires good communication and a clear understanding of the relationships and interdependencies among people, support and total commitment, which regrettably is not evident in the NDPW.

A competency is a characteristic of an employee, team or an organisation that contributes to successful job performance and the achievement of organisational results. These include knowledge, skills, and abilities plus other characteristics such as values, motivation, initiative, and self-control.

Project-implementing agents such as the NDPW require a high level of expertise, both theoretical and technical knowledge, as well as practical experience from all stages of planning, construction and management. It is very important to create an awareness of the implementing

agent's role, the need for to have a holistic approach and the ability to manage the processes that are involved in project implementation successfully.

2.4.2.5 Organisational Culture and Organisational Leadership

Haneberg (2009: 1) states that realigning processes and roles to fit a new organisational reality is daily work for leaders. Planning and implementing changes is a fundamental set of skills at which all leaders must excel to ensure their teams and functions are set up to do great work.

Leaders, according to the Northern Leadership Academy (2007: 6), do shape the culture of an organisation through a number of primary mechanisms:

- What leaders pay attention to – measure and control;
- Leaders reaction to critical incidents and setting precedents;
- Role modelling, teaching and coaching;
- Observed way of giving recognition and allocating rewards and status, and
- Observed criteria for recruitment, selection, promotion, retirement and excommunication.

Schimmoeller (2010: 125) states that organisational culture is often an important factor influencing the competitive strength of an organisation while leadership is a critical component in the success of an organisation. He also adds that it is important to understand how these two powerful determinants of organisational performance affect each other.

Leadership styles and organisational culture are not independent of each other. Research has shown there is constant interplay between leadership and organisational culture an organisation's culture derives from its leaders and culture affects the development of its leadership.

Schimmoeller (2010: 129) adds that organisational culture and leadership have an empirical link to each other and each plays a part in determining organisational effectiveness. Furthermore, organisational culture may have an influence on the effectiveness of leaders. There is evidence of a difference in the effectiveness of charismatic leaders in the private and public sectors. Howell and Avolio (1993) report a significant relationship between charismatic leadership and organisational performance in the private sector. Conversely, Javidan and Waldman (2003) found that charismatic leaders in public sector organisations, in this study a utility organisation, were viewed the same as charismatic leaders in private organisations by their employees, but

there was no significant improvement in organisational effectiveness. Javidan and Waldman theorise it is the difference in the organisational culture, which makes charismatic leaders less effective in public utility.

Schimmoeller (2010: 137) argues that it is important that organisations with hierarchy cultures such as the NDPW recognise that their culture does not support the most effective style of leadership. These organisations' executives must understand the hierarchy culture's process control and emphasis on efficiency and repeatable performance does not attract the best candidates for long-term effective leadership. Stakeholders must decide between cultures, that promote optimum organisational efficiencies or that the optimum style of leadership. Schimmoeller (2010: 138) adds that leaders in clan and adhocracy cultures could use this information to learn when to employ transactional and transformational leadership behaviours to increase effectiveness. Organisational leadership is the ability of management to understand its employees and organisational goals enough to bring everyone together. Frequently, an organisation with excellent leadership will have employees who feel that their opinions are valued and that their work is highly important to the shared success of the whole organisation. There is however no single technique to ensure that this happens.

According to the Northern Leadership Academy (2007: 10), organisational leaders do influence the organisational culture and for an organisation to function as a system the leaders are required to:

- Provide clarity of purpose and expectations, leading from ambiguity and managing personal and system anxiety;
- Lead decisions that are congruent and consistent with the organisation's purpose and articulate values of the system;
- Be clear about the system's boundaries and the expectations of the whole system and individual member's performance and behaviour;
- Clearly articulate responsibilities and accountability processes;
- Contextualise by making sure personnel understand the context in which the organisation as a system works;
- Spot and address unacceptable patterns, both external and internal;
- Question underlying assumptions that govern the system's actions;
- Keep the system connected to itself through dialogue and feedback processes, and

- Leaders need to sustain processes that enable the system to make the most of its capacity and capability to adapt that requires persistent attention to identity, relationships and information.

The Northern Leadership Academy (2007: 15 – 16) suggests that leaders of organisations should pay attention to the following:

- Repeatedly reconnect the organisation to its purpose and the principles that determine how to act in the organisation;
- Pay attention to the organisation's identity i.e. look to see how it is serving its core purpose, find ways of connecting members to collective identity;
- Seek to understand the context;
- Pay attention to trends in the environment and to internal patterns of behaving & are they adapting over time?
- Let go of the need to control the users/clients. Work with them in all aspects of service design;
- Commission processes internally that are fit-for purpose. Utilise hierarchy appropriately; develop capacity for seeking possibilities and engaging across the whole for complex issues, persistently seek ways of working that connect the whole, e.g. shadowing, coaching, work groups;
- Make the most of difference i.e. listen for and hear multiple perspectives, challenge assumptions, and take time to utilise these in making sense;
- Design feedback mechanisms that make the most of performance measures that are fit for the organisation's purpose, but flexible enough to be just one tool for helping the organisation choose action;
- Seek the big organisational challenges that will, by working them, solve many of the smaller problems being faced;
- Give time and space, both physical and mental, in the organisation for reflecting and learning collectively, find ways of connecting people in the organisation so ideas and knowledge can travel;
- Open up information systems, so organisational members can find their own solutions and work out how to act for themselves;
- Move away from the leader as expert to the leader as facilitator;
- Practice what 'you preach and walk your talk' i.e. model the behaviour that is sought in the organisation;
- Seek personal feedback through debrief meetings;

- Amplify what works. Do not wallow in problems persistently;
- Leaders must know their responsibilities and must take the difficult decisions i.e. act within authority, and
- Use hierarchy appropriately i.e. where the outcome is predictable.

Haneberg (2009: 6) argues that a healthy management team will support and create a healthy organisation culture. Consistency must start with the management team:

- Each team member is committed to the success of each other member;
- Each team member is comfortable having other team members represent her/him;
- Team members share a fundamental good will toward each other;
- Team members feel a good will toward the organisation;
- Team members do not stand by and watch other members make major mistakes;
- Team members feel able to influence each other;
- Leadership changes with the subject;
- Each team member believes that winning as a team is more important than personal or functional wins;
- The organisational vision is known and shared;
- The 'model' of high performance is known and shared;
- Team members seek appropriate peer level and upward coaching;
- Team members express individual opinions, concerns, and ideas;
- Together, team members expect and support lively dialogue, and
- Team members understand and embrace their overarching roles as guardians of long-term corporate culture and interests.

In addition to these lofty management team goals, according to Haneberg (2009: 7), it is important to recognise several destructive behaviours that can wreck an organisation's culture, especially when it comes from one or more managers. Haneberg (2009: 7) lists several specific examples of conversations and behaviours that would not be consistent with the characteristics of a healthy management team culture:

- When managers bash and complain about each another. This is a particularly damaging habit when spoken ill of peers and/or boss with other employees. It is also a sign of managerial immaturity;
- When managers avoid each other to prevent working with each other. Employees are not dumb and they pick up on the negative vibes that avoidance puts out

- When managers compete by expressing positions instead of collaborating and expressing interests, and
- When managers pontificate impressive visions, but fail to back these intentions up with aligned practices, measurements, and reinforcements.

Haneberg (2009: 7) advocates that good leaders cannot expect their employees to be more responsive to changes than what they are. Leaders cannot expect their team members to be more engaged and collaborative than they and their peers seem together. Leaders cannot expect their team members to value continuous growth if they do not see the leaders doing the same. Conversely, a healthy management team will be a driver for a healthy culture.

2.4.2.6 Project Leader, Manager or Monitor?

Miller (2008: 1-3) argues that the PMs tend to fit into one of three archetypes:

- Project leaders command the technical respect of the development team and the business respect of the client. Nonetheless, they frequently review specifications and occasionally contribute something because they just can't help themselves;
- PMs typically have experience in either the client's business or general construction, but augment that with specific training in project management tools and principles. Do not contribute or review specifications, but actively participate in functionality and technical discussions and
- Project monitors are trained in project management tools and principles, possibly deeply up to and including being a certified project management professional.

However, project leaders still need to know the techniques and tools of project management, even if they have the technical and business skills necessary intuitively to understand what it means to add or remove a feature are most likely to produce the best outcome on a project.

Monitors can track what is done, managers can contribute to how it is done, but a leader understands deeply why it is done and can change up the game when needed to win. This scenario plays itself off on a daily basis within the NDPW sometimes referred to as the dilemma of the programme manager. Which project must be allocated to which PM? The real project leaders tend to be over loaded while the monitors or junior PMs are not overloaded and being kept busy with trivial projects.

Project management according to Sowden (2010: 2), guides a project through a visible set of activities, from controlled start-up, through delivery, to controlled closure, and review. There will be visible milestones and well-managed resources, stakeholders and interdependencies, with all parties involved being clear about their goals and individual responsibilities.

Sowden (2010: 2) adds that good project management will be expected to have the following characteristics:

- A finite and defined lifespan;
- Defined and measurable business deliverables that contribute towards the achievement of business objectives;
- A defined amount of resources;
- Delivery of capabilities from which business benefits and performance improvements can be leveraged;
- An organisational structure, with defined roles and responsibilities;
- Focus on management and coordination;
- Delivery of outputs within time and cost constraints;
- Quality management, focusing on fit-for-purpose outputs based on requirements;
- Business cases containing an accurate budget for output delivery;
- Risk management focused on costs, quality and timescales for delivery;
- Issue management is proactive and focused on ensuring successful delivery, and
- Project plans that are both product and activity orientated.

2.4.3 PARENT ORGANISATION EFFECTIVENESS

2.4.3.1 Expectations within the Parent Organisation

Everyone in the organisation has expectations within the project service delivery process. In the project management environment, the PMs, project team members and upper-level managers, all have their expectations of what their relationships should be with the other role players and respective outcomes from their interactions. Kerzner (2009: 371) states that top management expects PMs to disseminate relevant information timely, to assume total accountability for the success or failure and to provide results. PMs should also have the capacity to handle most interpersonal problems, demonstrate a self-starting capacity and growth with each assignment or project.

Just as top management has expectations of PMs, PMs have certain expectations of top management such as providing clear decision channels, taking actions on request, providing feedback and assisting in conflict resolution. Management, according to Kerzner (2009: 371), must also provide sufficient strategic / long-term information, protection from political infighting, facilitate interfacing with support divisions and provide the opportunity for personal and professional growth.

The project team also has expectations from their leader, the PM. The project team expects the PM to provide proper direction and leadership, reduce conflict, stimulate group process and assist in problem solving. The PM must also provide representation with higher management and defend the team against outside pressure. Project team members, internal and external, generally want certain primary needs fulfilled (Kerzner, 2009: 371). PMs need also to be aware of the fact that team members may not always be able to verbalise these needs, but they do exist nevertheless. The PM should understand the team members' needs before demanding that the team live up to his expectations.

2.4.3.2 Responsibility and Authority

A major organisational factor regarded as a major impediment by PMs is the question of how much authority PMs have given that they are held accountable. After all, it is their responsibility to attain project success, but they have limited authority. Burke (2007: 230) refers to the 'responsibility and authority gap' where the PM is assigned the responsibility, but does not have sufficient authority to make things happen. Responsibility may be defined as feeling obliged to perform assigned work, while authority is the power to carry out the work.

Kerzner (2009: 1052) maintains that in successful project management systems, the following equation always holds true:

$$\text{Accountability} = \text{Responsibility} + \text{Authority}$$

However, Kerzner (2009: 111) also states that the authority of the PM must not be increased at the expense of the line manager's authority and PMs must always keep line manager informed on progress and any project related matters. Line managers on the other hand must provide proper direction, guidance and support to their PMs as well as realistic time and resource estimates. PMs within the NDPW have very little, if any authority as they are governed by un-

integrated policies and directives as well as admin clerks who are office based and non-technical.

2.4.3.3 Effectiveness in dealing with Management

PMs interact continually with upper-level management, sometimes more so than with functional managers. Not only can the success of the project, but also the career path of the PM depend on the working relationships and expectations established with upper-level management.

Kerzner (2009: 466) provides four key variables in measuring the effectiveness of dealing with upper-level management: credibility that comes from a sound decision maker, which is normally based on experience in a variety of assignments and projects; prioritising projects correctly can be done by stressing the specific importance of a project in relation to the objectives of the total organisation; accessibility relates to the ability to communicate directly and effectively with top management and by being logical, well prepared, weighing the facts carefully and explaining the pros and cons, and visibility can be increased by conducting timely informational meetings with those who count, but Kerzner also cautions PMs to be aware of the amount of visibility they really need.

2.4.3.4 Organisational Maturity and Excellence

In terms of project management, according to Rad and Levin (2002: 104), maturity relates to capabilities that can produce repeatable success in project management. It is also an understanding or visibility as to why success occurs and as to ways to prevent common problems.

There is increased interest in project management maturity in the market place today. Cooke-Davis (2002: 1) poses the question whether it makes sense to adopt a maturity model, as there are a vast number of models available to assess the maturity of project management processes and capabilities. Since every organisation is unique, and since every organisation undertakes unique projects, there is no 'one-size fits all' answer. Cooke-Davis (2002: 1) suggests that maturity models for organisations must be based on answers derived from the following questions:

- What is the relationship in the organisation between projects and processes? There is a general agreement that projects are different from processes. Projects are unique ‘chunky’ things that have a clear start and finish, that are defined by a unique scope of work and so on. Processes, on the other hand, are usually considered as repetitive sets of activities, carried out again and again with little variation. Project management generally defined as the set of activities that is carried out to manage any given project, is increasingly described as a set of interdependent processes, i.e. a system, as described by both the world’s leading project management standard, the PMI’s PMBOK Guide and the world’s most widely adopted project management methodology, PRINCE2. The first consideration is, whether the processes of project management sufficiently important to the organisation’s strategic goals to want to improve its maturity?

- What groups of project-related management processes are important to the organisation? When reviewing the maturity of processes consideration must be given to the following six different sets of processes that combine to deliver successful projects, and immaturity in any of them can inhibit the rewards reaped from investment in any others:
 - Project management processes - both the PMI’s PMBOK Guide and PRINCE2 define somewhat different processes in a different manner;
 - Technical delivery processes – software design, systems engineering and engineering design;
 - Programme management processes – how successful are programmes being managed;
 - Multi project management – some combination of project portfolio management and programme management to manage the dynamic interactions between projects that compete for the same resources or share the same deliverables;
 - Support process related to developing the capability, motivation and effectiveness of the people who manage projects, and
 - Organisational readiness – those processes, along with the culture that surrounds them, that govern the extent to which an organisation is capable of making root and branch changes to its business processes.

The role of each of these and their relative importance should be considered to define the possible scope of any attempt to improve maturity. The question of scope is important, since many organisations have found, for example, that the relatively simple challenge of improving any sub-set, such as the planning and estimating process, consumes an enormous

amount of effort and cost, because of entrenched cultural practices such as those surrounding time recording.

- How does process maturity relate to individual expertise? It is important to consider how the expertise of individual PMs relates to the degree of flexibility or inflexibility allowed in the project-related management processes. Every aspect of project management has two dimensions – a technical dimension and a human dimension. In this case, the technical dimensions include those process groups that have been defined above under the first two questions, while the human dimension includes not only the people who are operating the processes, but their expertise. The process of planning a large project, on the other hand, is very different in nature, as well as in scope, from processes such as planning a project to replace a fence. One of the differences is the extent to which individual expertise, knowledge and judgment are brought into play. The continuous gradual performance improvement as processes mature is in sharp contrast with the way individuals acquire skills.
- What distinguishes the final two stages is that although experts and proficient performers are familiar with the rules of good practice, they may also no longer select and follow rules. Rather they perform smoothly, effortlessly and subconsciously. What this means in terms of project related management processes, is that there is a tension between the degree of ‘mechanistic’ prescription that needs to be built into a mature process to minimise its variability, and the degree of flexibility that an expert PM will bring to bear on any given project, to optimise the project performance. Therefore, the question to consider is the extent to which the organisation depends on the skills of expert PMs, and the extent to which the improvements will come from the application of a tightly defined process. How much can they manage the project through individual expertise, and how much are they dependent on the collective capability of the whole organisation and its support to deliver a consistent process?
- What kind of maturity model should be considered? The maturity models that are available today and that cover project-related management processes can be divided into three approximate types relating primarily to the maturity of project management processes, technical delivery processes, and the total organisation. They differ from one another in terms of both the scope of what is covered, and their central focus. Project management maturity models are often based on the processes grouped by knowledge area as described

in the PMI PMBOK Guide. The second group of models are based around the technical delivery processes. Inherent in this has been the concept that processes mature through a series of five discrete stages.

- Performed - the process is unpredictable, poorly controlled and reactive;
 - Managed - the process is characterised for projects and is often reactive;
 - Defined - the process is characterised for the organisation and is proactive;
 - Quantitatively controlled - the process is measured and managed, and
 - Optimising - focusing on process improvement.
-
- What kind of benefits can be expected, and will it be worth the effort? There is no question about whether or not to implement a maturity model, especially in the case of the NDPW's current situation. Models will not only indicate organisations' current maturity level, but also what they need to do to advance towards their chosen target level. The benefits will better the way PMs do their business and even facilitate continuous improvement. Specifying a particular maturity level using a specified maturity model as a part of the solicitation process might allow better control over the cost, time, quality and other objectives of the procured assets. The challenge is to undertake the business change.

Cooke-Davis (2002: 4) advocates that as project management matures as a business discipline, organisations will inevitably face a greater demand to demonstrate the maturity of the processes that they promote as in some form or other, maturity models are here to stay. Kerzner (2009: 58) concludes that maturity and excellence in project management is not the same, according to the following definitions:

- "Maturity in project management is the implementation of a standard methodology and organisational processes that ensures a high likelihood of repeated project success.", and
- "Organisations excellent in project management are those that create the environment in which there exists a continuous stream of successfully managed projects and where success is measured by what is in the best interest of both the organisation and the project i.e. the client."

Maturity implies that the proper foundation of tools, techniques, processes and even culture exists. Kerzner further states that when projects come to an end, there should be a debriefing with senior management to discuss how well the methodology was used and to recommend

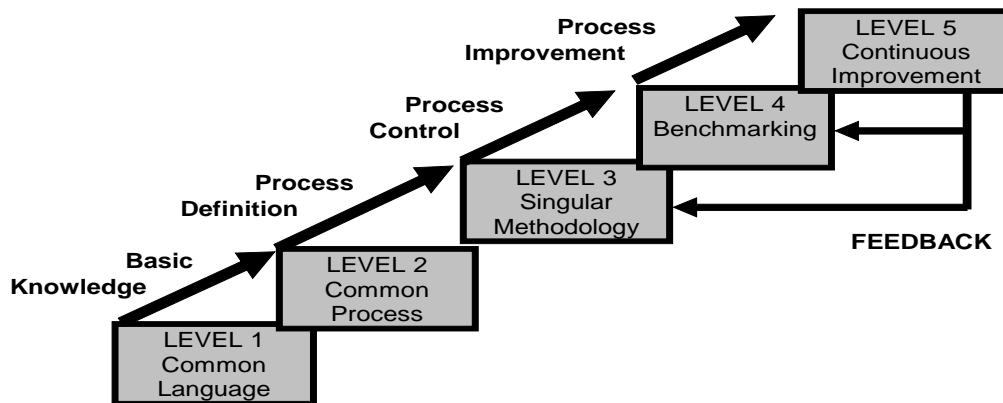
changes. This debriefing should also look at key performance indicators as shared learning topics, which will allow the organisation to stay abreast with what is being done right and what needs to be corrected.

Excellence goes well beyond maturity according to Kerzner (2009: 58), and states that there has to be maturity to achieve excellence. Kerzner also argues that during excellence, a continuous stream of successful projects is completed, but there would still be project failures. For that reason, one could then also say that true project failures are the ones where no lessons were learned and heeded. Kerzner (2009: 928) maintains that the foundation for achieving project management excellence can be best described as the project management maturity model (PMMM), which comprise five levels as illustrated in Figure 2.18 wherein each level represents a different degree of maturity in project management:

- **Level One – Common Language:** The importance of project management and the need for a good understanding of the basic knowledge of project management, and the organisational language and terminology is recognised;
- **Level Two – Common Process:** The common processes is defined and developed to such an extent that the successes of the one project can be repeated on other projects. Project management principles are fully recognised, can be applied and support other methodologies employed in the organisation;
- **Level Three – Singular Methodology:** All corporate methodologies, the centre of which is project management, are synthesised into a singular methodology to gain maximum advantage by making process control easier;
- **Level Four – Benchmarking:** The process improvement to maintain a competitive advantage is realised. Benchmarking is performed on a continuous basis upon deciding whom and what to benchmark, and
- **Level Five – Continuous improvement:** The information obtained through benchmarking is evaluated and decision is made whether or not that information will engender the singular methodology.

Kerzner (2009: 929-932) also explains that there could be overlapping between the levels although the preceding level must be completed before the following level can be completed. Overlapping between levels 1 and 2 can occur because the organisation can begin the development of the project management process, while refinements are being made to the common language or during training.

Figure 2.18: Kerzner's five levels of organisational maturity (Kerzner, 2009: 928)



Overlaps between levels 3 and 4 could occur when the organisation is developing a singular methodology or to improve an existing methodology. Overlap of level 4 and 5 occur when the organisation become more and more committed to benchmarking and there is continuous improvement. The speed at which the organisation might wish to change may also cause the overlap. Level 2 and 3 generally do not overlap, as it is highly unlikely that some of the level 3 work can be started before the completion of level 2. The feedback shown in Figure 2.20 implies that these three levels form a continuous improvement cycle and it may be possible for all three levels to overlap.

Rad and Levin (2002: 105) summarises the differences between an immature organisation and a mature organisation in Table 2.7.

Table 2.7: Immature versus Mature Organisations (Rad and Levin, 2002: 106)

Immature organisations	Mature organisations
<ul style="list-style-type: none"> Processes improvised. Reactionary. People are fire fighters. Schedules and budgets exceeded. Quality is difficult to predict. 	<ul style="list-style-type: none"> Organisation-wide ability to manage processes. Roles and responsibilities are defined and clear. Client satisfaction. High-quality projects. Project success is the norm.

Rad and Levin (2002: 105) maintain that a maturity model can be used to determine the existence and effectiveness the existing project management policies and procedures. higher maturity levels signify effective project procedures, and higher desirable balance between cost-

schedule-quality and client satisfaction. Rad and Levin (2002: 06) elaborate on the benefits from using project management maturity models, which include the ability to assess an organisation's current project management capabilities and the ability to identify organisational strengths and weaknesses in project management.

Rad and Levins' maturity models (2002: 107) methodically evaluate an organisation's capabilities in managing project facets such as cost, schedule, scope, quality, procurement, reporting, integration, risk, communication, team morale, service provider relations, and client relations. The levels of maturity define specific goals or objectives that are to be achieved that are presented as results statements, which describes the milestones to verify whether an organisation has effectively implemented certain processes.

The levels of maturity define specific goals or objectives to be achieved, which are presented as result statements, indicating whether the organisation has effectively implemented certain processes. As a progressive standard, the models demonstrate that reaching a higher-level means reaching a higher level of maturity:

Maturity Level One - Ad hoc, initial:

- Inconsistent procedures and no formal project management guidelines with a high probability of cost, time, and quality slippages;
- Proper execution and on-time delivery are rare and are effected through the heroics of the project team;
- No project management training provided and rework is expected due to bad quality of projects resulting in many projects not being closed out;
- Isolated success stories due to individual effort, few competent people and unusual sacrifices by one or a few;
- Inspections and audits are conducted primarily at the request of clients;
- Status reports and progress reports are prepared and project reviews are held only in response to client request, and
- Files are not maintained in a fashion that promotes sharing of lessons learned even if those lessons could be identified.

Maturity Level Two - Consistent, abbreviated and repeatable:

- Project management methodology has been adopted by the organisation and PM roles and responsibilities are defined and established, while standard forms and templates are used to assist the PM;
- Established procedures used for preparing plans, tracking cost and schedule performance that result in visible effective management of cost, scope, time, and quality;
- Proper and timely project management training is being provided and there is a disciplined formalised project management;
- Resource planning and cost estimates are prepared;
- Project problems are recognised and quickly corrected expeditiously;
- Quality audits and inspections are planned and conducted;
- Project risks are identified analysed and reviewed methodically;
- Response strategies are developed for major risks;
- Effective procurement strategies and procedures;
- Underlying disciplines are not well understood or consistently followed;
- Project success is still largely unpredictable and cost, time, and quality slippages and scope changes are the norm;
- There is a tendency to collect data and to evaluate the effectiveness of the plans that are in place and to assess project performance;
- Status reports are prepared and project review meetings are held, and
- Service providers such as the consultants' and contractors' performance is monitored and reviewed.

Maturity Level Three - Integrated, organised and well defined:

- Organisation implements PM processes and gives recognition to successful PM processes;
- PM methodologies are well integrated with other organisational procedures - all processes running smoothly;
- Total organisational commitment, focus and support for compliance with processes and procedures;
- There is a centralised PM entity that operates similar to a PMO to maximise co-ordination and implementation;
- Use PM software for control measures;
- PM processes are documented, standardised and well integrated;
- Proper PM tools and techniques are adopted and used throughout the organisation;
- Problems are methodically anticipated and efficiently prevented to minimise their impact;

- Information is collected, shared and used on projects throughout the organisation and across all projects;
- Training is planned and provided according to needs, roles and responsibilities;
- The org. demonstrates commitment by establishing a PMO or component with the specific responsibility for development and deployment of a standard project management methodology that includes and integrated change control system, and standard templates for use in project planning, monitoring and control;
- At the time that a project is initiated, the implementation methodology is reviewed to determine given the nature of the project, whether a scaled version of the standard procedures is more appropriate;
- Historical information is collected and made available throughout the organisation for use in project development plans;
- Life cycle cost analysis is conducted regularly;
- Routinely reviews are conducted of activities in terms of scope, cost schedule, quality, human resources, communications and procurement;
- The metrics to assess the performance on a project-by-project basis and across the organisation are collected and trends analysed;
- The project checklists are continuously refined to increase effectiveness;
- The PMO documents causes of variance for lessons learned, and establishes a repository for project documentation;
- Working in partnership with the procurement department, the PMO establishes a lesson-learned database as procurement information is archived for future use;
- The PMO also develops, implements and maintains a standard Project Management Information System (PMIS) that supports the measurement of project variables and changes in the project environment that also supports risk identification and reporting, and
- The PMO is also responsible for PM training by establishing a standard curriculum throughout the organisation. Typically, the PMO funds the indirect and direct costs of training activities, so these costs are not part of a specific project's budget.

Maturity Level Four - Comprehensive and integrated management:

- Organisation commits to PM culture and captures quantified performance data;
- Emphasis is to ensure that PM supports the business culture;
- Detailed quantitative measures of effectiveness of project management are collected and used by upper management;

- Quantitative project objectives are set to measure progress in implementing PM Procedures and to determine the effectiveness of these procedures;
- Project success is more uniform partially because PM is recognised as a professional core competency;
- Performance to cost, time, quality and is more according to plan;
- The PMO assumes greater responsibilities as it coordinates PM initiatives organisation-wide and assesses the contribution of PM to the organisation in relation to the organisation's business goals and best practices;
- The PMO take the lead in establishing quantified project objectives to improve PM performance and in monitoring the performance in meeting these objectives;
- More emphasis will be placed on knowledge management, which will also be the responsibility of the PMO. For example the PMO can establish a link from a project's WBS dictionary to the organisation's knowledge management system;
- To ensure that the needs of the entire organisation are met, the PMO regularly reviews the classification system for scope changes;
- For the purpose of comparisons across projects the PMO could establish a facilitative method for documenting cost estimates;
- The PMO will establish a PM career path and uses competency models in conjunction with proficiency charts, and
- Working in partnership with the human resources management unit, the PMO establishes a personal development plan for use by each individual in project management. This plan facilitates the determination of each person's contribution to the overall project objectives and to the organisation's strategic goals. The PMO will then also establish and co-ordinate mentoring programmes for individuals.

Maturity Level Five - Optimising and adaptive:

- Optimising with focus on continuous improvement facilitated by organisational use of quantitative data to conduct continuous improvement;
- PM roles and responsibilities are well understood and there are organisational objectives for improvements in project management;
- PM procedures are regularly fine-tuned to achieve organisational objectives;
- Common causes of PM problems are prioritised and systemically eliminated;
- Continuous improvement is facilitated by timely feedback on project cost and schedule performance and by fostering innovative ideas and technologies;

- Project success is the norm and projects meet or surpass objectives in the areas of cost, scope, time, and quality;
- In these organisations it is recognised that projects depend on successful and effective processes, that projects are a reason for success and that projects are an integral part of the business;
- The PMO is responsible for PM improvement plan with quantitative objectives for project management improvement, resource requirements, and training needs;
- The PMO seeks proposals from people at all levels in the organisation for improvement initiatives. In turn the PMO provides recognition for those who support this improvement programme;
- The PMO serves as the organisation's representative in external communities of practice such as PM knowledge networks. The PMO co-ordinates and integrates resource planning, resource acquisition and resources assignment, and
- Working with the service providers such as consultants and contractors, and clients the PMO ensures an integrated team support for each project.

This maturity model also provides the impetus to establish uniform project management practices within the organisation to provide capabilities for benefiting from one project experience into the next project and to formulate continuous improvement methodologies for project management procedures. The benefits of adopting and using evaluation models extend into the details of project performance by fostering improved project performance and provide a baseline for improvement objectives.

Sowden's (2010: 10) portfolio, programme and project management maturity model (P3M3) uses a five-level maturity framework for assessing maturity levels of organisations:

- Level One – awareness of process
- Level Two – repeatable process
- Level Three – defined process
- Level Four – managed process
- Level Five – optimised process

The above framework is then applied to portfolio-, programme- and project management processes that focuses on seven process perspectives that exist in all three models and can be assessed at all five maturity levels:

- Management control;

- Benefits management;
- Financial management;
- Stakeholder management;
- Risk management;
- Organisational governance, and
- Resource management.

This flexibility allows the organisation to review all seven-process perspectives across all three models or across only one or two of them. The P3M3 method provides a number of organisational benefits:

- It is also designed to acknowledge strengths as well as highlighting weaknesses judged against an objective standard;
- It helps organisations to decide what level of performance capability they need to achieve in order to meet their business needs;
- It focuses on the organisation's maturity rather than specific initiatives as good results are possible even with low levels of maturity;
- It recognises achievements from investment;
- It justifies investment in portfolio-, programme-, and project management infrastructure, and
- It provides a roadmap for continual progression and improvement.

Other more tangible benefits of the P3M3 according to Sowden (2010: 14), include:

- Increased productivity with shorter cycle times;
- Greater time and cost predictability;
- Fewer defects, mistakes and creep in performance thereby leading to higher quality outcomes and a lower cost of quality management;
- Improved client satisfaction, and
- Enhanced employee morale.

Kerzner (2009: ii) lists sixteen points to project management maturity as a prerequisite for achieving project success:

- Adopt a project management methodology and use it consistently;
- Implement a philosophy that drives the organisation toward project management maturity and communicate to everyone;
- Commit to developing effective plans at the beginning of each project;

- Minimise scope changes by committing to realistic objectives;
- Recognise that cost and schedule management are inseparable;
- Select the right person as PM;
- Provide executives with project sponsor information, not project management information;
- Strengthen involvement and support of line management;
- Focus on deliverable rather than resources;
- Cultivate effective communication, cooperation, and trust to achieve rapid project management maturity;
- Share recognition for project success with the entire project team and line management;
- Eliminate non-productive meetings;
- Focus on identifying and solving problems early, quickly, and cost effectively;
- Measure progress periodically;
- Use project management software as a tool - not as a substitute for effective planning or interpersonal skills, and
- Institute an all-employee training programme with periodic updates based upon documenting lessons learned.

2.4.4 CRITICAL FACTORS AFFECTING PROJECT MANAGEMENT EFFECTIVENESS

Van der Walt and Knipe (1998: 84) and Saqib *et al.* (2008: 395 – 396) maintain that there are a number of critical factors, which influence the effectiveness and ultimate results of project management in organisations:

- Leadership. The leadership abilities of the PM and management of the parent organisation are absolutely vital;
- Organisational structure. A rigid and inflexible organisational structure can cause inefficiency, particularly when multidisciplinary project teams are formed within the organisation. Lines of communication and authority are needed to prevent confusion and inefficiency in those involved;
- Knowledge of the project. All team members of the project must have adequate, continuous information on the purpose, policy, activities, responsibilities, procedures and schedules of the project;
- Skills. All role-players are links in the project chain. Inexperienced persons should be given proper training before the project schedule is completed;
- Systems and procedures. Prescribed procedures and existing systems in the institution should be streamlined and followed continuously to ensure orderliness;

- Decision-making. Authoritative people must be kept informed of progress, so that decision-making is not delayed unnecessarily. Project teams must also be allowed to make day-to-day decisions. All decision making must be based on good business principles and not on emotional principles. Consistency is key to success;
- Management style. Democratic, participative styles are more successful as decisions are made as a team and responsibility is shared. Consistency however is absolutely crucial to maintain respect and discipline;
- Motivation and reward. People are inspired to greater productivity if they know that they will be rewarded for their efforts. Motivation mechanisms for completing the project are important, and
- Development. Project management development develops the individuals, teams and the organisation as a whole, founding a learning organisation.

2.4.5 THE VARIABLES TO SUCCESS

Projects are wonderful settings for learning and innovation. The challenges of a project along with the diversity of people on the project team lend to breakthrough opportunities for individuals, the team, and the client. Unfortunately, too many projects are taxing for the participants. With a dose of determination that can change.

Kerzner (2009: 366) explains that project success is often measured by the 'actions' of four groups: the client, the PM and team, the parent organisation, in this case the NDPW, and the contractor. There are certain actions that the PM and the project team can take in order to stimulate project success:

- Select key project team members with proven track records in their fields;
- Develop commitment and a sense of mission from the outset;
- Seek sufficient authority;
- Co-ordinate and maintain a good relationship with the client, parent organisation and project team members;
- Have key team members assist in decision-making and problem solving;
- Develop realistic cost, time, performance estimates and goals;
- Have backup strategies in anticipation of potential problems;
- Provide a team structure that is appropriate, yet flexible and flat;
- Go beyond formal authority to maximise influence over people and key decisions;
- Employ a workable set of project planning and control tools;

- Avoid over reliance on one type of control tool;
- Stress the importance of meeting cost, schedule and performance goals;
- Give priority to achieving the mission or function of the end-item;
- Keep changes under control, and
- Seek to find ways of assuring job security for effective PMs.

With regard to the parent organisation such as NDPW, there exist a number of variables that can be used to evaluate parent organisation's support. There must be a willingness of management to co-ordinate efforts amongst divisions involved in the service delivery process to minimise delays, and to maintain structural flexibility by training officials to become multi-skilled to assist other divisions when falling behind schedule. Management must also be willing to accept and implement changes emanating from meetings and 'walk their talk'. Effective strategic planning must be done in conjunction with all divisions and key role-players to generate ownership and maximise efforts in the service delivery process, which also necessitate prompt and accurate communications.

Top management must also provide sufficient external buffering to the operational staff from clients and contractors when unsubstantiated complaints are lodged. Complaints need to be investigated before action is taken against the PM or project team without even consulting them. Proper emphasis must be placed on past experience and management must ensure that lessons learnt are heeded, constantly remind all parties that each division is part of the system and they have a role to play in the service delivery process. When one division fails, the whole organisation fails. Enthusiastic and proactive support amongst divisions, and between regional offices and head office, will raise the moral and create a sense of belonging within the organisation.

Kerzner (2009: 367) states that the mere identification and existence of these variables do not guarantee project success in dealing with the parent organisation. However, they imply that their existence provide a good foundation for the PM to take the appropriate actions and increase the likelihood of attaining project success.

Kerzner (2009: 368) believes that if these variables are present as the basic foundation, it should be possible to:

- Encourage openness and honesty from the start from all participants;

- Plan for adequate funding to complete the entire project by developing clear understandings of the relative importance of cost, schedule and technical performance goals;
- Develop short and informal lines of communication and a flat organisational structure;
- Delegate sufficient authority to the principal client contact, and allow prompt approval or rejection of important project decisions;
- Make prompt decisions regarding changes, contract award or go-ahead, and
- Develop close, not meddling, working relationships with project participants avoiding arms-length relationships and excessive reporting procedures.

Quality in a service industry depends on the knowledge - and in some cases, the wisdom - of service providers – just ask anyone who has ever hired a consultant. Over the past decade, many thinkers have explored the nature of knowledge accumulation and transfer, seeking to help organisations tackle the challenges of managing both knowledge and knowledgeable workers. Concepts such as the ‘learning organisation’ and the ‘community of practice’ sprang from studies of how people learn and how learning migrates from theory to practice.

Macdonald and Malan (2005: 172) define a learning organisation as “an organisation capable of benefiting from the variety of knowledge, experience and skills of individuals, through a culture, which encourages mutual questioning and challenge, around a shared purpose or vision.”

Bourne and Walker (2004: 233) describe a process of ‘tapping into the power lines’. It is set in an environment where PMs in large, learning organisations have responsibility and authority for managing schedules and costs but rarely have a sufficient level of authority to manage all aspects of the project. The power base of the individual PM depends on the perceived importance of the project as well as their reputation and influencing skills. “Knowing which styles of persuasion to use and when depends to large extent to the political skills and courage of the particular PM.” (Lovell 1993: 73) None of the PMs described in their case studies was able to operate effectively within the power structures of the organisation surrounding the project. Even those who recognised that such engagement was necessary could not achieve their objectives.

The key to surviving and thriving within an organisation's power structure appears to be building and maintaining robust relationships. Bourne and Walker (2004: 226) claim that it is dangerous to ignore the effect of ‘in-house politics’ on the outcomes of a project. It is important to understand how the patterns of political activity operate in any particular organisation. It is

also important for a PM to understand how they react to these situations and if necessary adapt personal behaviours to ensure success. The emphasis must be on development of deliberate rational thoughtful strategies as well as developing an empathetic relationship with influential project stakeholders. Understanding the power environment of the organisation and the position of the actors within it for each particular issue is also crucial. With experience, this understanding becomes a combination of conscious and intuitive, almost instinctive, thought processes leading to actions. This sounds deceptively simple, but require knowledge of the environment and all the 'players' in the process and what their drivers, needs and wants are.

According to Bourne and Walker (2004: 234), failure to understand and control the political process has been the downfall of many good projects and PMs. To manage successfully within an organisation's power structures it is necessary to understand the organisation's formal structure, its informal structure in maintaining acquaintance with former work colleagues and its environment.

Communication is a vital tool for PMs to develop and maintain robust and effective relationships with stakeholders within all three organisational structures. The power structures surrounding a project are complex and constantly changing and require a high level of maintenance. Active communication, including sharing access to the 'grapevine', is more easily accomplished sideward with the PM's peers. This is done mostly in the informal organisational structures through meetings, telephone calls, and perhaps regular coffees. Maintaining communication and tapping into the power lines in an upwards direction, is a great deal more difficult, but not impossible and is generally in the domain of the formal organisational structure with elements from the organisational environment described above. Regular project updates and formal project communications and presentations to influential senior stakeholders and effectively managed governance meetings are formal means.

Other effective upwards communication techniques require knowledge of the organisation, the business processes and exploiting the 'grapevine'. Inevitably, 'rogue' stakeholders will incite conflict or cause trouble for the PM by supporting one of the conflicting parties, or seeking to establish ascendancy over other stakeholders, or with other hidden agendas. This trouble can come in the form of seeking to cancel the project or change the scope or technical direction of the project. If the PM has established credibility, disaster may be averted. To establish credibility, the PM must build the appropriate power and influence foundations by involving all relevant stakeholders throughout the project and maintaining them with active communication

systems. Bourne and Walker (2004: 235) list danger signals, which a PM should look out for in avoiding possible trouble with senior stakeholders:

- Interfering without consultation;
- Not providing support when needed;
- Poor communication links and too many reporting levels between the PM and the senior stakeholder, and
- Unfounded promises or commitments.

Only a PM who has built credibility, and knows how to tap into the power structures of his/her organisation can recognise these signs, and defuse potential crises before disaster strikes. Bourne and Walker (2004: 235) conclude that the qualities and actions that make a good leader coupled with the third dimension wisdom and know-how will support a PM working successfully within the power structure of an organisation to maintain the objectives defined by the project vision and mission.

Lewis (2007: 40-45) argues that the first order of business in today's world must be meeting the needs of clients. Lewis also highlights one important point that role players must not only be inspired to do more than just the bare minimum required to satisfy the clients' needs, but must strive to actually delight the client. To achieve this require that client expectations be exceeded without exceeding cost thereby building client loyalty and, in a competitive situation, defend against competition, or in the case of the NDPW be able to retain their clients to warrant their existence. The NDPW as an organisation, the PMs, the design teams, and the contractors must understand that their primary reason for existence is to satisfy the clients' needs.

According to Du Plessis and Hoole (2006: 36), one of the main causes of project failure is attributed to a non-supportive project management culture in organisations. The question might also be asked: "Isn't that why we want to have competent PMs?" The problem is, even an incredibly competent PM cannot compensate for the project stakeholders who cannot competently perform their roles - consequently requiring the risk response action of finding and correcting the weakest links. Kerzner (2009: 368) confirms the necessity for combining the relevant actions of the project team, parent organisation, and client organisation to achieve project success. The fundamental lessons for management are to match the right people with the right posts as no system is better than the people who implement it. Proper planning and control systems on projects should be the focal point of project implementation that must be implemented and maintained to ensure successful completion of projects consistently.

2.5 PROJECT SUCCESS OR FAILURE?

In the real world, a project is considered a success if it was completed on time, within budget and in accordance with the approved scope with no significant delay, and the end user is totally satisfied and the product delivers real value to the business. However, according to James (2006: 1), this list has been criticised as not being comprehensive enough.

Success has always been the ultimate goal of every activity, and a construction project is no exception. Due to the ambiguous definition of project success and the different perceptions of participants toward this concept, it may be difficult to tell whether a project is successful as there is a lack of consensus. Cost, time, and quality have long been the success criteria used to evaluate the performance of a construction project.

2.5.1 MANAGING PROJECT STAKEHOLDERS

A project stakeholder is any person, group of people, or organisation who has a vested interest in the project and / or the ability to influence its outcome, either positively or negatively now or in the future, i.e. anybody who is affected by or can affect the project. Stakeholders are important to a project because:

- They can be critical in its success or failure ;
- They can have a much better understanding of the feasibility of different actions and the resources required to reach certain objectives than an outsider to the project;
- Their expectations need to be managed, and
- They can provide important information on the progress of the project.

In construction projects, numerous stakeholders are involved at each stage directly or indirectly. According to Dooley and Sormunen (2010: 2), this requires an integrated design process (IDP) that involves all participants in the early design phase of the project. This means that all stakeholders collaborate throughout the initial design process from the setting of the project goals to the definition of measurable design parameters that represent these goals. Dooley and Sormunen (2010: 2) divides the different stakeholders of the early design stage into three main groups: society and citizens - local authorities, politicians, religious leaders, community leaders, citizens; clients and users - end users, investors, initiators, developers, building owners, facility managers, and construction sector in the form of implementing agencies, builders, designers, and suppliers.

Project success or failure is ultimately judged by stakeholders, not the PMs. However, Solovitsky (2006: 1) argues that organisations routinely cite stakeholder management as one of their biggest challenges. A logical first step prior to providing the most relevant information to stakeholders is to identify who they are and what results determine success in their eyes. Project success is based on a number of variables outside the standard PM's mantra of on time, within budget, and within specifications. A project's success is driven by the unique concerns of all stakeholders. Clients may determine the project ROI as their primary stake, where CEOs may focus on project profitability.

A project stakeholder refers to all the people who have a vested interest in the project at hand. This includes project sponsors, clients, end-users, those executing project activities, PMs, suppliers, contractors, consumers, and business decision makers. Stakeholder management according to Solovitsky (2006: 1-2), include the activities organisations perform to manage these relationships. There are three steps to manage project stakeholders effectively:

- Stakeholder identification – identifying who are the project stakeholders and how they will be affected by the project. These individuals include those working directly on the project, business decision makers affected by the project, and external resources e.g. clients, suppliers and contractors attached to the project;
- Stakeholder prioritisation – once the stakeholders are identified, the next step is to rank their importance based on the stakeholder's impact on the project's success. Prioritising stakeholders will enable the project leader to develop a clear view of who needs to be addressed for a successful project outcome based on the party's interest and influence, and
- Stakeholder analysis – detailed understanding and mapping of what motivates project stakeholders. Direct contact with project stakeholders is required to have a deeper understanding of their project motives. This step also focuses on the analysis of the effectiveness of communication of all parties involved.

Consequently, stakeholder management is identifying who is involved on projects and gaining the critical support needed for a successful project outcome. Once these responsibilities are accurately identified, managing the flow of information among parties is critical in implementing a successful stakeholder management strategy.

Traditionally, according to Dooley and Sormunen (2010: 2), the most powerful stakeholders have been local authorities through the building regulations and secondly investors who have

been overly concerned with project capital cost and have disregarded future savings through reduced life cycle costs. When life cycle environmental impact is considered all stakeholders are recognised and encouraged to collaborate, interact and influence each other's designs. Each stakeholder introduces their own expertise and personal agenda to the design process and the result is a more informed and balanced design. Building owners are concerned with the running costs over the building lifetime and favour reduced energy consumption. Facility managers are generally concerned with practical matters such as façade cleaning and system maintenance. They are directly responsible for the actual everyday performance of the building and their contribution to the design process is invaluable.

Building users must be satisfied with the facilities and comfort level provided. Failing to provide the needs of the user may lead to wasteful post-occupancy alterations to the building design and decreased building value. Building services engineers are concerned with the building geometry and material properties which are traditionally fixed after the planning stage. Reduced levels of energy consumption can be achieved when architects and engineers design the building shape in parallel. The building orientation may be changed or external shading may be added to reduce solar gain and save on cooling energy. Glazing size and properties may be optimised to maximise on day lighting or to reduce annual heating and cooling loads. Environmental impact consultants may wish to comment on the suitability of the project site to reduce the development of unsuitable sites due to biodiversity and ecological concerns, to reduce light pollution and to reduce the transport related carbon footprint of the building.

Contractors may provide comments on the constructability of the building design and may propose practical measures to simplify the building process thus saving energy and materials. Material suppliers can inform the design team with regard to the embodied energy of materials. Material options can then be categorised and selected based on where the material will be sourced from and how it will be processed before arriving to the site.

The disparity between individual stakeholders' desires and overall objectives is often contentious, but project leaders can win respect when they combine disciplined change management procedures with interpersonal skills. Obtaining upfront stakeholder commitments provides an invaluable foundation for future negotiations when it comes to scope changes. Dooley and Sormunen (2010: 2) argue that an integrated design process can achieve improved building performance (IBP) with lower costs and fewer disruptive changes during the later project stages. Their argument is based on the fact that the earlier in the process, which IBP occurs, the greater the impact on building performance and the lower the impact on cost will be.

According to Soges (2008: 16), it is advisable to consult with stakeholders throughout the project cycle because:

- They are the people or organisations which have the greatest interest in the outcome of the project and are deemed the best friends or worst enemies of the PM;
- They are the people with the greatest influence on the project and can make the difference as to whether it succeeds or fails;
- They have the most information about the progress of the project, the environment in which it is operating and the likely results, and can give the best indications for necessary modifications throughout the project, and
- They are typically beneficiaries of the project. By consulting with them regarding their exact needs will assist the success of the project.

Soges (2008: 16) also adds that consultation is appropriate throughout the project life cycle at the following stages:

Identification, analysis and formulation:

- Analysis of existing situation - What is known about the existing situation?
- Problem identification - What are their problems?
- Prioritisation of issues - Which is the most important problem?
- Clarification of the objectives of any intervention - What are their objectives?, and
- Clarification of the expected results of any intervention -What do they want from a project?

Preparation, appraisal and commitment:

- Identifying resources available for the project - What resources can they put in?);
- Identifying resources needed for the project - What resources do they need?);
- Producing a terms of reference - Is it what they require?, and
- Going through a tendering process - Stakeholders should assist in the selection process, where appropriate.

Implementation, monitoring and reporting:

- On-going monitoring and reporting arrangements - Stakeholders should be kept informed, and consulted about changes to the project;

- Identifying problems - Stakeholders can identify problems more quickly than the PM;
- Addressing failures, and
- Modification of the project objectives as appropriate - Stakeholders have a role to play in whatever changes are made.

Evaluation:

- Assessing whether the contractor has truly completed the task - Stakeholders' opinions are valuable in this respect;
- Identifying what resources are required for the future. If something goes wrong this may mean that more resources are required rather than that the project has failed - Stakeholders should also try to learn from experience, and
- Identifying the need for future projects - Stakeholders may want to promote new projects.

Stakeholder buy-in, according to Solovitsky (2006: 2), will make or break an organisation's project management initiative by playing a vital role in determining the success or perceived success of projects. Identifying stakeholders and understanding their critical expectations relevant to projects can only add value to the successful development and implementation of a project portfolio management (PPM) solution and / or methodology in an organisation. Successful PPM implementations seriously consider stakeholder needs by breaking down typical communication barriers experienced by varying players such as management, operations, and clients.

2.5.2 PROJECT SUCCESS

2.5.2.1 What is project success?

The common book definition of project success, according to Russel and Prado (2008: 1), is when a project ends in total client / user satisfaction, makes a positive contribution in achieving business objectives, achievement of stated scope, accomplishment of the desired technical and quality specifications, and completed within the desired time and cost limits. Rad and Levin (2002: 9) highlight the importance of clarifying what is or what will be regarded a successful project before implementing the project. On some occasions, the project team may consider the project to be a success while the client pronounces it a failure. This disparity of judgment as to the success or failure might also exist amongst team members and the clients' end users. When someone pronounces a project a success or a failure, the judgment is based on some factual

evidence, although not everyone may use the same data. The perception of project success or failure is often based on unspoken and personal indices, which is why two different people, usually with different experiences and values, may assess the success of the same project differently. There is thus a need for a set of performance indices to formalise the project evaluation process. The literature review revealed that there are various contributing factors to achieving project success as well as various perspectives with regards to when a project can be pronounced as being a success. Baker and Baker (2000: 341) believe projects succeed for the following reasons:

- A realistic plan has been built and agreed upon with stakeholders through careful analysis of the requirements involved;
- Conflict is quickly accelerated to the PM's office for resolution;
- The PM is a strong leader and click with both team members and senior management;
- Goals and objectives are clear and concise and team members fully understand them;
- Careful reporting and monitoring are in place for tracking the project from the start;
- The right people in the right numbers are available at the right time to handle each and every task;
- Task and resource requirements were successfully identified and budgeted for before the project started;
- The manager participates routinely with team members to help out, to listen to their problems, and to see first-hand what needs to be done to address them;
- Similar projects are studied to learn what problems to expect and how to handle them, and
- Most importantly, the stakeholders are kept satisfied throughout the project and agree at the end that the project met their expectations.

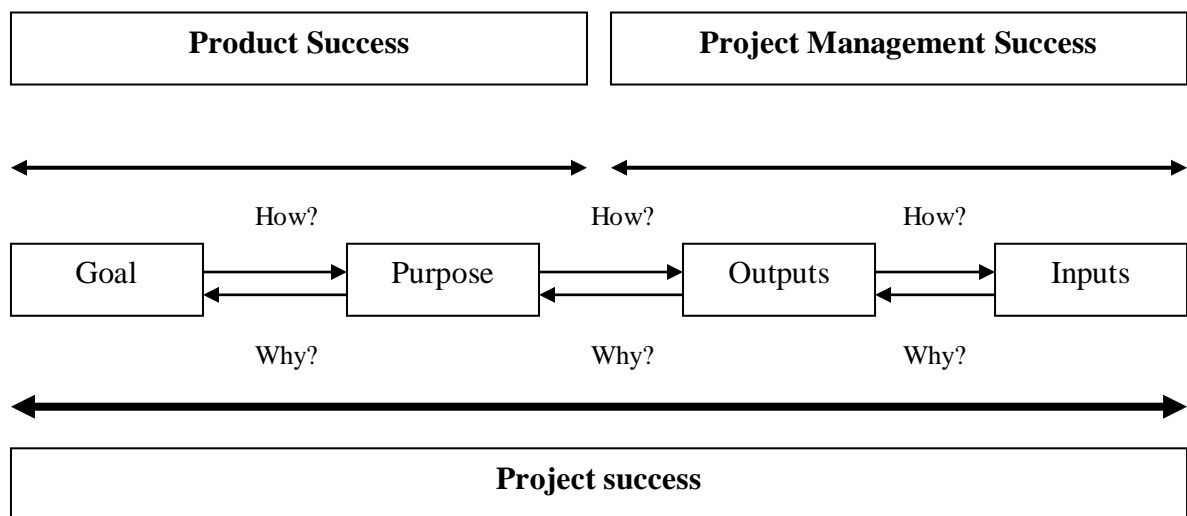
Project success is the core concept of project management. However, Baccarini and Collins (2000: 1) argue that there are two distinct concepts of project success:

- Project management success – This focuses upon the project process that has three criteria: meeting cost, time, and quality objectives on both the inputs and outputs; quality of the project management process, and satisfying project stakeholders' needs where they relate to the project management process, and
- Product success – This deals with the effects of the project's final product that has three criteria: meeting the project owner's strategic organisational objective, i.e. project goal; satisfaction of the users' needs, i.e. project purpose, and satisfaction of the stakeholders' needs where they relate to the end product. The key stakeholders are the client and / or end user.

Baccarini and Collins (2000: 2) make use of the logical framework method (LFM) to simplify the concept of project success. Projects are formed to accomplish objectives and success is measured in terms of how well these objectives have been met. A project has in fact a hierarchy of linked objectives that can be identified and structured by using the LFM. There is no limit to the number of levels of project objectives. However, a common four-level structure can be identified (Coullard *et al.*, 1995: 448-445; Davis, 1995: 393-397; Youker, 1993: 78-83):

- Project goal. The project goal provides the rationale behind the project and describes the long-term objective. All projects should be supportive of the performing organisation's strategic goals;
- Project purpose. The successful achievement of the project's purpose can be measured in terms of how well the project's product satisfies the user's needs;
- Project outputs. These are the immediate results or deliverables produced by the project activities that explains what the project will produce, and
- Project inputs. These are the resource inputs and activities required to deliver each output.

Figure 2.19: Link between the LFM and Project Success (Baccarini and Collins, 2000: 2)



The LFM is illustrated in Figure 2.19, is a 'How-Why' logic chain that displays the relationships between the hierarchies of the project objectives. The 'why's' are the ends and the 'how's' the means, starting with the project goal and ask: 'How is this to be achieved?' The answer should be project purpose. Then ask: 'How is this to be achieved?' the answer should be project input, and so on and finally working backwards asking 'why?' The LFM is however undermined by explicit assumptions.

Baccarini and Collins (2000: 2) elaborate on the contrast between product success and project management success in which it is maintained that project management success is subordinate to product success. The project management success criteria of cost, time, and quality are subordinate to the higher product success objectives of goal and purpose. This is why projects which ought to be considered a disaster in project management terms are deemed to be a success, simply because the higher-level objective was met according to De Wit (1998 cited by Baccarini and Collins, 2000: 2).

Project management success thus influences product success. Good project management can contribute towards product success, but is unlikely to be able to prevent product failure. However, poor project management in terms of cost and / or time slippages may result in the non-attainment of product success such as profitability, market share or usefulness of the product.

Project management, according to Morris (2001: 23), should embrace a broader view of the discipline that is the management of projects. This perspective focuses on project success, covering the sophisticated management of technical, commercial, organisational, and other factors, moving from strategic to tactical dimensions, within demanding cost, time, and other constraints. This is a broader concept beyond the classical project success criteria based only on time, quality and cost.

2.5.2.2 Main contributing factors to project success

According to Lewis (2007: 295), the main contributing factor to project success is the co-ordination and relations factor, which requires:

- Unity between PM and functional managers including support staff;
- Project team spirit, sense of mission, goal commitment and capability;
- Unity between PM, the client representative and PM's superior;
- PM's human, administrative, and leadership skills;
- Realistic progress reports;
- Adequate authority of PM;
- Adequacy of change procedures;
- Project team participation in decision making and major problem solving;
- Parent organisation enthusiasm, and

- Availability of backup strategies.

Wideman (2001: 5) also distinguishes between PMs who are thinkers or feelers, which have a major impact on the way projects are managed and the level of success achieved. Thinkers are those who obtain satisfaction through the successful achievement of goals and objectives as their concerns stem from ensuring that the necessary time and resources are available and within their power to control. Wideman (2001: 6) adds that thinkers are usually involved by choice and often represent management. Feelers, however, tend not to be stimulated by setting goals and objectives and see it as being of little or no consequence. In their view, according to Wideman (2001: 6), the only important thing about goal setting is that goals should be broadly based, loosely defined and flexible. Wideman goes on in saying that feelers are stakeholders and constituents in the process, but their satisfaction comes, if at all, not from a sense of achievement, but from participating in the process. Thinkers achieve what they achieve through a satisfaction of 'getting things done', while feelers, on the other hand, are more concerned about their level of involvement to be able to shift blame when things do go wrong.

Critical success factors for achieving project success according to Gido and Clements (2003: 312) include:

- Successful PMs accept responsibility for making sure the client is satisfied and the work scope is completed in a quality manner, within budget, and on time;
- The PM needs to be proactive in planning, communicating, and providing leadership to the project team to accomplish the project objective;
- The PM needs to inspire the project team to succeed and to win the confidence of the client;
- By involving the project team in developing the project plan, the PM ensures a more comprehensive plan and gains the commitment of the team to achieve the plan;
- Successful PMs are proactive in addressing problems, have strong leadership ability, the ability to develop people, excellent communication skills, good interpersonal skills, the ability to handle stress, problem solving skills, and time management skills;
- Successful PMs require a participative and consultative leadership style in which the PM provides guidance and coaching to the project team while showing that they value the contributions of the team members when they seek advice and suggestions from team members. Thus fostering motivation through recognition;
- Capable PMs are optimistic and have high, yet realistic, expectations of themselves and each person on the team. Set a positive example for the team in terms of expected behaviour;

- A good PM provides opportunities for learning and development by encouraging team members to take the initiative, take risks, and make decisions. Rather than create a fear of failure, the PM realises the mistakes are part of learning and growth experience;
- Good PMs spend more time listening than talking. They listen to the needs expressed by the client and the ideas and concerns expressed by the project team;
- Communication by PMs needs to be timely, honest and unambiguous;
- The PM should create an atmosphere that fosters timely and open communication without fear of reprisal and must be understanding of differing viewpoints;
- When unforeseen events cause turmoil on a project, effective PMs remain composed and do not panic;
- To make effective use of their time, PMs need to have self-discipline, be able to prioritise, and be willing to delegate, and
- The PM must establish procedures for how changes will be documented and authorised right at the start of the project.

Saqib *et al.* (2008: 405), list the top five critical project success factor categories as:

- Contractor-related;
- PM related;
- Procurement related;
- Design team-related, and
- Project management related factors.

Saqib *et al.* (2008: 405 – 406) explain that factors within the above categories are equally important, while other categories do not have the same impact on project success. The top ten critical success factors (across the seven categories given above) that emanated from their research are:

- Decision making effectiveness;
- PM's managerial experience;
- Contractor's cash flow;
- Contractor experience;
- Timely decision-making by the client's representative;
- Site management;
- Supervision on site;
- Planning effort , i.e. design team input;
- Prior project management experience, and

- Client's ability to make decision.

Young (2009: 3) suggests that the only way the PM can motivate the project team and stakeholders to perform at a high level is to:

- Have a solid vision that the PM can mobilise the team around;
- Give the team a clear picture of the expected outcome, and empower them to build their own path to success;
- Engage them in dialogue;
- Ask the team members how they feel about the project, their role, and its charter, and
- Show them where their contribution matters. Listen to them, cheerlead for them, challenge them, and build trust.

Young (2009: 4) acknowledges that being a successful PM takes more than applying best practices and obtaining certifications. However, the above four skills establish a solid foundation that a PM can continue to engender with work experience, continuous learning, and personal development.

Kerzner (2009: 365) argues that the project cannot succeed unless the PM is to employ a system approach to project management by analysing all variables that lead to success and failure.

Project success according to Kerzner (2009: 366) is often measured by the 'actions' of the three groups: the PM and consultant team, the parent organisation and the client's organisation. Certain actions the PM and team must take to stimulate project success include:

- Insist on the right to select key project team members;
- Select key team members with proven track records in their fields;
- Develop commitment and a sense of mission from the outset;
- Seek sufficient authority and a projectised organisational forum;
- Co-ordinate and maintain a good relationship with the client, parent organisation and team;
- Seek to engender the public image of the project;
- Have key team members and stakeholders assist in decision-making and problem-solving;
- Provide a team structure that is appropriate, yet flexible and flat;
- Go beyond formal authority to maximise influence over people and key decisions;
- Employ a workable set of project planning and control tools;
- Avoid over reliance on one type of control tool;
- Stress the importance of meeting cost, time, and performance goals;

- Give priority to achieving the mission or function of the end-item;
- Keep changes under control, and
- Seek to find ways of assuring job security for effective project team members.

Kerzner (2009: 366-367) adds that top-level management must be willing to commit resources and provide the necessary administrative support so that the project and the organisation easily adapt to a routine of effective business. The organisation, such as the NDPW must also develop an atmosphere conducive to good working relationships between the PM, parent organisation and the client organisation. The parent organisation's support according to Kerzner (2011: 367) can be evaluated by the following variables:

- A willingness to co-ordinate efforts;
- A willingness to maintain structural flexibility;
- A willingness to adapt to change;
- Effective strategic planning;
- Rapport maintenance;
- Proper emphasis on past experience;
- External buffering;
- Prompt and accurate communication;
- Enthusiastic support, and
- Identification to all concerned parties that the project does contribute to parent capabilities and growth.

However, Kerzner (2009: 376) warns that the above variables may not guarantee success, but if present, it will provide a good foundation for taking appropriate action thereby increasing chances of achieving project success.

The variables that exist for the client organisation according to Kerzner (2009: 368) include:

- A willingness to co-ordinate efforts;
- Rapport maintenance;
- Establishment of reasonable and specific goal and criteria;
- Well-established procedures for changes;
- Prompt and accurate communications;
- Commitment of client resources, and
- Providing sufficient authority to the client representatives, especially the decision-making.

Kerzner (2009: 368) argues that if the above variables are present as a foundation for achieving project success then it should be possible to:

- Encourage openness and honesty from the start from all the participants;
- Create an atmosphere that encourages healthy competition, but not cut throat situations of 'liars' contests;
- Plan for adequate funding to complete the entire project;
- Develop clear understanding of the relative importance of cost, schedules and technical performance goals;
- Develop short and informal lines of communication and a flat organisational structure;
- Delegate sufficient authority to the principal client representative and allow prompt approval or rejection of important project decisions;
- Reject buy-ins;
- Make prompt decisions regarding contract award and go-ahead;
- Develop close, not meddling, working relationships with project participants;
- Avoid arms-length relationships;
- Avoid excessive reporting, and
- Make prompt decisions regarding to changes.

With regard to the parent organisation such as the NDPW, there exist a number of variables that can be used to evaluate parent organisation's support. There must be a willingness of management to co-ordinate efforts amongst divisions involved in the service delivery process to minimise delays, and to maintain structural flexibility by training officials to become multi-skilled to assist other divisions when falling behind schedule. Management must also be willing to accept and implement changes emanating from meetings and 'walk their talk'. Effective strategic planning must be done in conjunction with all divisions and key role-players to generate ownership and maximise efforts in the service delivery process, which also necessitates prompt and accurate communications.

Top management must also provide sufficient external buffering to the operational staff from clients and contractors when unsubstantiated complaints are lodged. Complaints need to be investigated before action is taken against the PM or project team. Proper emphasis must be placed on past experience and management must ensure that lessons learnt are heeded, constantly remind all parties that each division is part of the system and they have a role to play in the service delivery process. When one division fails, the whole organisation fails.

Enthusiastic and proactive support amongst divisions, and between regional offices and head office, will raise the moral and create a sense of belonging within the organisation.

2.5.3 PROJECT FAILURE

2.5.3.1 What constitutes project failure?

There can be many definitions of what constitutes project failure and many degrees of project failure. The majority of authors define project failure as any project that does not deliver the expected outcomes in terms of containment of budgeted costs, delivery within the allocated schedule, and / or providing outcomes that do not meet the quality requirements. It is also evident that once any form of slippage is starting to occur, it is very difficult to get the project back on track no matter how experienced the PM is.

Lewis (2007: 287-288) argues that there are a few things wrong with the frequently used definition of project failure where cost, scope, time, quality, and performance targets were not met. Firstly, he asks: “Where did the targets come from? Were they just pulled out of the air? The target could be unrealistic. Should failing to meet those targets be considered a failure? Second, even if all the targets are met, does the project solve the problem it was intended to solve?” These are all questions that must be considered.

Lewis (2007: 288) list four types of errors that can be made in solving problems within projects:

- Type I errors: Not taking action when it should be taken;
- Type II errors: Taking an action when non should have been taken;
- Type III errors: Taking the wrong action , i.e. solving the wrong problem, and
- Type IV errors: Addressing the right problem, but not implementing the solution, i.e. not treating the cause, but only the symptom.

Using their definitions, it can be said that a project that meets its P, C, T and S targets, but is not used, is either a Type III or a Type IV error. It could also be that a Type III error was made that ultimately caused the project to be a Type IV error. The wrong problem was solved and nobody uses the end product.

Lewis (2007: 288) identified four different types of failures:

- Type 1 – Objectives not met;

- Type 2 – Undesirable side effects;
- Type 3 – Design failures, and
- Type 4 – Inappropriate objectives.

For Type 2 failures, the objectives were met but there are undesirable consequences or side effects. The question then is, “Are the side effects acceptable?” As an example, a central air conditioning unit is installed in a building and every once in a while people book of sick blaming the air conditioning. Judging from this it could be said that people are thus surrounded by Type 2 failures.

Type 3 failures are design failures, e.g. a fire ring main is installed around a building. The sprinkler system fails due to insufficient water supply resulting from the installation of a pressure pump with insufficient capacity.

Type 4 failures, inappropriate objectives are similar to Schultz *et al.* Type II errors; they are solving the wrong problem. For example, a new conveyor is installed at the airport for conveying the baggage to reduce damages to the baggage. The conveyor works fine, but the baggage is still being damaged.

2.5.3.2 Why do projects fail?

Smith *et al.* (2000: 1) advocates that a stakeholder-based approach known such as a strategic needs analysis (SNA), can improve the strategic decision-making process of a project, as clients are able to identify their strategic needs and thus improve the effectiveness of the briefing process. The early stages of the project is the most important as it is during these stages where most of the critical decisions are made that effect the economy, efficiency, timing, functional content, appearance and most important of all, the real value and the success of the project (Barret *et al.*, 1999 as cited by Smith *et al.*, 2000: 573). SNA is a process that involves the client group, from the top to the lower levels of the organisation, and any stakeholders who have a direct or indirect interest and can make a contribution to improving the type, nature and quality of the proposed project. The reason being that when a process gains the stakeholders’ commitment as well as their involvement and support it is more likely to be a success.

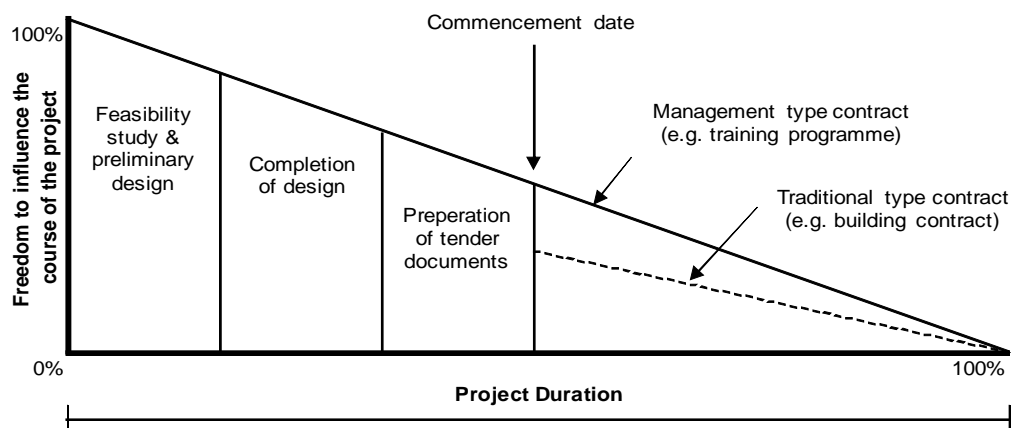
Smith *et al.* (2000: 574) add that strategic analysis workshops are used in the process to encourage clients to re-orientate their frame of reference from the perspective and standard

response, to one where they have a strategic view of their own, potential users' and the community's goals, objectives, needs and requirements where the structure of the SNA process consist of the following stages:

- Briefings to staff of the organisation which is combined with an information seminar to develop strategic client awareness of the project initiation process and outcomes;
- Two workshops to develop a strategic approach to the development of an agreed initial brief that identifies the client's and the stakeholders performance criteria, and
- The development of a performance brief to guide the development of the project in the design phase.

Neal *et al.* (1989: 2) maintain that the PM's power to influence the course of the project diminishes as the project progresses. As decisions are made, actions taken, planning and designs completed and contracts entered into, the project takes a more definite slope and opportunities to make changes disappear. From Figure 2.20 it is clear that early decisions and planning or lack thereof have far reaching effects and necessitates projects to be well planned in an objective way.

Figure 2.20: Illustration of the reduction of the PM's influence on a project as the project progresses.



The pre-design stage of construction projects has become a focal point in design management research in the last decade, as it is primarily the source of problems such as rework, scope changes, variation orders, cost and time overruns, and contractual claims (Smith *et al.*, 2000: 572). It is acknowledged that client briefing is an intractable problem that many projects encounter because little attention is given to assessing the needs of the client, stakeholders and those of the design team. Following generally accepted project management principles does not

always deliver successful projects and the later problems are discovered 'downstream', the more costly the correction.

"Most projects that fail had failed before they started" Thomsett (1992 cited by Loader, 2000: 2), largely through organisational constraints on budgets, time and predefined outcomes, improper objectives, scope definition and planning, and poor organisational support and lack of management's commitment to coordination.

There are numerous causes of project failure and individuals are rarely to blame for project failures, however the most common causes of project failure according to Lewis (2007: 306) are:

- The problem scheduled for solution is not properly defined;
- Planning is based on insufficient data or the project plan lacks detail;
- The PM or team performed planning without involving the rest of the stakeholders and participants;
- No one is in charge or takes the lead; the roles are not well defined;
- Project estimates are best guesses and resource planning is inadequate;
- Ballpark estimates become official targets;
- People do not see themselves as working on one team;
- People are constantly pulled off the project or reassigned with no regard for impact;
- The project is not tracked against the plan or people loose site of the original goal, and
- Senior manager refuse to accept reality.

Kerzner (2009: 465) adds another six major causes for the failure of projects:

- Selection of a concept that is not applicable – selecting a project that does not have a sound basis or forcing a change when the time is not appropriate;
- Selection of the wrong person as PM - must be more of a manager and place emphasis on all aspects of the work;
- Upper management that is not supportive – must concur in the project management concepts and behave accordingly;
- Inadequately defined tasks – there must be an adequate system for planning and control;
- Misused management techniques – there is a tendency to attempt to do more than is required by the contract , sometimes as a result of poor planning, and
- Project termination that is not planned – termination must be planned so that the impact on expenditure cash flows and the client can be identified and minimised.

Bernard (2007: 1) cites 'The top three project problems' that veterans of the project management business, encounters most often are: lack of executive and organisational support; changes to project scope and the lack of change management; and failure to establish user expectations which leads all too often to unrealistic deadlines and client dissatisfaction. Bernard (2007: 1) also elaborates on 'The top three project killers' being the lack of executive and organisational support; lack of pre-project planning; and insufficient people resources allocated to get the project done.

Burke (2007b: 278-279) provides more reasons for project failure:

- Inability of the PM to steer the project through a minefield of problems and risk triggers;
- Failing to recognise stakeholders' interests;
- Misinterpretation of the scope of work;
- Mixing and confusing tasks, specifications, approvals and special instructions;
- Using imprecise or vague language that could lead to confusion, ambiguity or misinterpretation;
- Failing to get third-party review or verification from either the client, sub-contractors and suppliers;
- Not working closely with the client;
- Employee dishonesty including fraud and corruption;
- Insufficient reviews and control, and
- Lack of commitment and support from project team members.

Dolan (2010: 1-2) identified eight common causes of project failure based on research on projects undertaken by the Office of Government Commerce, United Kingdom:

- Lack of a clear link between the project and the organisation's key strategic priorities, including agreed measures of success;
- Lack of clear senior management ownership and leadership;
- Lack of effective engagement with stakeholders;
- Lack of skills and proven approach to project and risk management;
- Failure to break down projects into manageable steps;
- Consideration of projects on the basis of initial cost rather than whole-life value;
- Lack of client understanding and contact with the supply chain, and
- Poor project team integration.

Symonds (2011: 1-3) provides fifteen major causes of project failure, ranked in order of importance:

- Poorly defined project scope;
- Inadequate risk management;
- Failure to identify key assumptions;
- PMs who lack experience and training;
- No use of formal methods and strategies;
- Lack of effective communication at all levels;
- Key staff leaving the project and / or organisation;
- Poor management of expectations;
- Ineffective leadership;
- Lack of detailed documentation;
- Failure to track requirements;
- Failure to track progress;
- Lack of detail in the project plans;
- Inaccurate time and effort estimates, and
- Cultural differences in projects.

This list demonstrates both the scale of the management challenge at hand and the range of ways in which the client and the project team can improve performance. Even on simple, straight forward projects there are many areas that can cause the sorts of problems that can eventually manifest themselves in failure. Add to the many possible causes of failure any level of complexity and problems can rapidly escalate into disasters. The causes of project failure are wide and varied. In addition promised resources may not be available when required, executives may fail to grasp the full reasons behind instigating a project or there may be political reasons for continuing with a clearly unviable project. Symonds (2011: 3) argues that the three most potential causes of project failure which are the most important of all and, if dealt with fully and completely, can help to avoid project failure. These are the project scope, risks and key assumptions. Also important according to Symonds (2011: 3), is retaining the skills already available within an organisation and developing existing and new talent through project management training, mentoring and coaching, to sustain service delivery levels and to build a project competent organisation.

2.5.3.3 Factors contributing to project failure.

Citing various authors, Loader (2000: 2-4) refers to the factors that contribute to project failures and projects to being perceived as failures as, 'The Deadly Sins':

- Project Management Fundamentals:
 - Overly optimistic estimates – estimates can be over optimistic often due to non-retention of past learning and poor training in estimation techniques. Over optimistic estimates can also be made to obtain project approval, which in the long run create unrealistic and unobtainable targets (Hearth, 1991);
 - Lack of planning – “Planning is work – working is not planning” (Thomsett, 1992: 9). Failing to plan leaves no means to assess progress or success and the team will go about the project in a haphazard fashion bouncing from crisis to crisis;
 - No clear objectives and requirements make it impossible to know when the project has satisfied its purpose and to measure the added value or success of the project to the user or sponsor, and
 - Changing requirements – when changes are constant and unregulated it becomes difficult for the project to reach satisfactory conclusions as the completion date and deliverables may not be clearly defined;
- Organisational Culture:

Lack of business and client or end-user involvement – the organisational culture in which the project must operate can have a significant impact on the project if there is dissonance between the culture and attitude of the PM and that of the organisation, or the organisation that does not fully support the project, e.g. unnecessary delays in processing variation orders or no urgency from the client's side in getting necessary funds approved for the scope changes;
- Organisational Infrastructure:

No project team can fully realise project delivery without the supporting infrastructure of the organisation that will ensure that the team has the necessary skills, resources, equipment and support to give each project the maximum chance of success, and

- Project Leadership and Capabilities:

“Project success depends on the commitment and attitudes of the people involved in the project. The leadership of the PM is the dominant factor.” (Rubenstein, 1989), and the leadership “must be provided with the appropriate authority, responsibility and resources ... and access to management.” (Hearth, 1991) The fundamental role of the project leadership is to provide direction, empower others, make decisions, assess and take risks, ensure a disciplined and methodology approach is undertaken and ensure that parties effected by the project is kept well informed (Johns, 1994). The area where project leadership is most often let down is not having the full support from senior / top management in the project activities. Without the necessary organisational power to obtain decisions from the hierarchy the project is doomed to fail.

Many additional factors are behind the abovementioned ‘Sins’ according to Loader (2000:4), which include PMs:

- Having little or no formal project training and not applying lessons learnt;
- Lack decision empowerment, thus hampering the project efforts and causing delays, and
- Not being encouraged or able to adopt a ‘can do’ attitude resulting in hesitation / indecision, and

projects where:

- There is no clear leader;
- Objectives are not aligned with the organisational strategy;
- There is continual scope change, no risk assessment or contingency planning, and
- No sense of common purpose amongst team members, and

due to a lack of organisational infrastructure and support such as:

- Development of skilled project staff and nurturing of project experience;
- Organisational pressure to submit ‘dishonest reports’ to save face with management;
- Lack of project management support or mentoring services and project methodology;
- Organisational pressure to ‘lower estimates’ to get the project going;
- Denial of risk means that risks are not mitigated or provisioned, and
- ‘Organisational pressure’ to lower standards just to get the project signed off.

Bernard (2007:1) highlights the ten warning signs of project failure that aligns with Loader's 'deadly sins':

- Undefined or poorly defined project requirements and objectives. - PMs should collaborate directly with key project stakeholders to define specific detailed project requirements and deliverables. Defining specific project requirements is necessary to maintain alignment of project tasks to desired business outputs, as well as to ensure that projects have clear and specific project objectives established.

While this step may seem obvious, many organisations will skip this stage and go right to solutions to jump-start a project. These projects tend to fail and the organisations usually encounter over spending, project restarts, rework, and / or unmet expectations;

- Lack of project planning. - Once the requirements and objectives are known, then conducting thorough, upfront project scope planning is an essential next step to help PMs and stakeholders accurately and clearly define project scope.

It is important for people to understand that there is more than one-way to achieve the requirements and that scope and cost vary by approach. Project scope management is necessary to develop reasonable project estimates, engender the management of client and stakeholder expectations, and mitigate project risks such as cost overruns and schedule delays.

PMs should establish and standardise a scope management process to develop concise project scope statements and credible budget and schedule estimates;

- Lack of or poorly developed budget forecast. - Thorough research and preparation is necessary to develop a reasonable budget estimate. Many organisations will skip this step or just do a very rudimentary estimate due to the amount of work needed to complete the task.

Some organisations that do not maintain internal archives of project costs turn to external consultancies to acquire external spending / budget information on organisations that have completed similar projects in a similar market.

Using the estimated budget, PMs should collaborate with stakeholders to help further refine the project scope and final deliverables. PMs should use their initial budget to base actual spending plans as well as to proactively track spending and respond quickly to potential issues to prevent shortfalls in the budget;

- Lack of stakeholder involvement. - PMs should ensure that primary project stakeholders are involved with the project from the beginning and throughout the entire project. This is crucial to ensure that visions are properly communicated, defined, and verified.

It is very common for project efforts to be delegated to staff that do not have sufficient knowledge or understanding of the desired effort. As a result, projects are defined incorrectly and the projects delivered do not meet the expectations of key stakeholders;

- Lack of executive support. – Projects can be highly political and may end up involving an excessive number of unnecessary or incorrect participants. Executives should seek on-going senior management endorsement and enforcement of the planning process to keep the effort on track and to minimise pushback from line of business (LOB) managers.

Support from senior management and staff involvement that form part of the business processes are both needed to drive and keep the effort focused and moving. Ownership of the project must be shared to satisfy the demands of user management. Executives must convey this message to senior management giving organisational support to retain involvement and participation.

- Frequent or large changes to project scope. - Scope changes can significantly impact the cost, schedule, risks and quality of the entire effort. PMs should watch out for early and frequent changes to the project scope.

While scope is defined early in the planning and estimation phases, there are valid reasons for change. For example, a stakeholder may acquire additional insight into a problem during the course of the project or external market conditions and / or government regulations can drive requests that extend beyond the initial project scope. However, changes to project scope can also occur because of developing a poor initial scope document.

PMs must ensure that adequate time is spent on defining and refining the work effort directly with key stakeholders;

- Lack of change management process. - Project changes will occur. However, uncontrolled changes and insufficient change management processes will increase the probability of project failure. A formal and structured change management process is necessary to ensure effects of any changed requirements are properly analysed, prioritised, and balanced according to the project's budget, schedule, and scope.

PMs should take a phased approach to projects, so that clients understand that it is easier to facilitate changes early in the project life cycle than toward the end while construction is in progress. This will help acceptance of trading off specific desired changes and will help reduce the impact of change onto the project, and allow for cost and time containment;

- Failure to establish appropriate client / user expectations. Disputes often occur as a result of mismatched expectations. Missed project targets will cause delays, rework, and additional project spending. Setting user expectations is necessary to establish a baseline of what and what not to expect from the final deliverable.

PMs should work with key stakeholders in establishing and prioritising project requirements as well as reviewing budgets and schedules. Additionally, all people involved in the project effort should have periodic joint sessions, to ensure the same communications on project expectations are received by everyone.

This process helps keep users involved and abreast of the project's status, as well as minimising the potential for misunderstanding of project expectations between stakeholders;

- Unrealistic deadlines. - Stakeholders want their projects completed now. In some harsh environments, they may question PM's commitment and effort. The parent organisation such as the NDPW and PMs must work with stakeholders to help them understand what is possible with the level of incumbent resources.

PMs should collaborate with key stakeholders in defining reasonable project schedules and deadlines to ensure that business conditions and requirements are met and better manage expectation levels.

PMs will need to ensure that project cost, scope, and time are optimally balanced to achieve the desired deliverables and the desired time. Effective planning and monitoring are necessary to help develop a strong start for the project. However, PMs must remain aware and anticipate change as re-planning is necessary throughout the project.

- Insufficient resources. - Required resources are often underestimated and scheduled inaccurately. Organisations often encounter problems with resource allocation, as many organisations do not spend sufficient time on resource scheduling and proper management.

In fact, it is very common for organisations to overestimate the on boarding of staff to a project, which immediately causes the project to be late and in trouble, impairing the NDPW's image with client managers and executives. In addition, resources are often utilised ineffectively, especially when individuals are required to support multiple projects concurrently. Insufficient resource supply will cause delays and impact overlapping projects.

PMs should plan according to the established project schedule estimates and work with concurrent project schedules to help ensure that resources are properly scheduled.

One of the most common contributing factors generally overlooked is communication, the critical link amongst people, ideas and information that is necessary for success. However, for PMs, especially in the South African context, there is one major communication obstacle that must be overcome, the obstacle of diversity. The major communication difficulties that arise and affect individuals, project teams and the organisation as a whole as well as the client, which could also mean the difference between project success and failure, are language, educational and technical knowledge differences. Not knowing or understanding the other person's culture, protocol and speech etiquette, the misinterpretation of body language and when there is a lack of trust amongst the role-players.

2.5.3.4 How to know when a project fails?

There are no guaranteed means of knowing exactly when a project starts to fail as a project might even fail before it starts. Loader (2000: 2) state that there are some well-established early signs of failure, while these may not be scientific, they are common indicators, which should be thought of as 'alarms' that should then entice further exploration and investigation:

- When milestones not being met it is a sure sign that the project is in trouble;
- Low team morale, personality clashes, or no 'fun'. If problems of this nature surfaces it stands to reason that things are not running as smoothly as they should;
- Many crises is usually a sign of the basic project management fundamentals being missing, e.g. lack of planning, risk management and monitoring, and
- Other signs of deeper project problems include procrastination; goal posts keep moving and team confusion over roles and objectives.

There a fine line between perceived project success and failure. James (2006: 1) argues that traditional assessments of project success typically include some measure of timeliness,

financial metrics and a checklist of requirements that have been satisfied. Governance through universal knowledge areas such as communication, cost, risk, scope, time, and quality management provides standards that hold the PM accountable for project performance. This observation, however, begs one peculiar question according to James (2006: 2): “Can a project rank favourably in traditional assessments, yet still be classified as a failure?” The answer when applying project management theory is commonly ‘no’. The answer in practice is absolutely ‘yes’. Veritable project success extends beyond the technical and tactical into the practical and strategic.

Crawford (2009: 4–5) gives a number of tip-offs to know when a project is in trouble when project in which displays:

- Inadequate project planning;
- No client objectives or project objectives;
- Faulty task management;
- Poor reporting and communications;
- Insufficient documentation;
- Abrupt scheduling changes;
- Project disorganisation;
- Muddled business objectives;
- Extreme complexity, and
- Under expenditure.

The project in which team members display low morale, with top performers leaving; whose deliverables are consistently late, which is over budget, or seems to have uncontrolled scope is in trouble. Likewise, if the project team continually has to request more details; is in continual meetings; knows it is in trouble, but has no plan for recovery– immediate intervention is required.

Where should the project office start, once the runaway and failing projects have been identified? Crawford (2009: 5) recommends firstly focusing only on the highest-priority projects that can be identified by examining the business case and identifying the tangible and intangible benefits to be derived from project completion. This is a process the organisation must master in order to succeed at project portfolio management. The selection and prioritisation of projects is a key function of higher-level PMOs. Once the highest-priority projects have been identified

according to initiate, Crawford (2009: 5) recommends this seven-step project recovery programme:

- Assess the problems;
- Develop an action plan to address them;
- Get commitment to work the action plan from the stakeholders—team members, executive management, and other stakeholders, including suppliers and subcontractors;
- Set project standards;
- Provide coaching and mentoring to the project staff;
- Be sure knowledge transfer is taking place in all recovery interactions to avoid future problems, and
- Conduct reinforcement reviews.

The conundrum for the PM is determining how the project is really measured, technically and practically. The PM must balance the accepted technical, traditional quantifiable assessments and the practical, influential human assessments; the subtle human assessments unsurprisingly guide the overall perception.

2.6 CLIENT EXPECTATIONS LEADING TO CLIENT SATISFACTION

Expectations are formed by many factors including previous experience, word of mouth, service reputation, media reports, interrelationships and communication between the service provider and the client in relation to the needs of the client. People tend to be satisfied when their perceptions of the service they have received match their expectations that were created by promises made by the service provider. Perceptions of the service a person has received will vary according to the individual and the nature of the service. People generally rate reliability very high in terms of: performing the promised service dependably and accurately; responsiveness and promptness; quality assurance; inspiring trust and confidence; empathy, and the ability to put things right when mistakes are made.

Client satisfaction has widely been recognised by researchers as one of the key challenges for quality improvement in the construction industry. It is a vital factor in the development and management of the construction process, as well in the creation of efficient organisation-client relationship. Furthermore, according to Nzekwe-Excel *et al.* (2008: 1), client satisfaction is a catalyst for client retention, which is a success strategy for any organisation.

2.6.1 MANAGING CLIENT EXPECTATIONS

Client expectations are a measure of the clients' anticipation of the quality of an organisation's products or services. Expectations represent both prior consumption experience, which includes some non-experiential information such as advertising and word-of-mouth, and a forecast of the organisation's ability to deliver quality in the future. Camilleri and Clarke (2011: 1) argue that managing client expectations is important to avoid unnecessary confrontations, demands and claims. From their experience as professional liability insurance and risk management professional service providers they have formed the opinion that when clients are educated as to what to expect during the design and construction of their project and what standards a design firm must meet, then minor upsets can be viewed as a necessary evil of the design and build process and energy can be directed toward resolving those routine problems amicably and effectively.

According to Lewis (2007: 291-293), there are three outcomes of a project that must be considered (Figure 2.21), which influences the judgment of success or failure the project deliverables, the results achieved, and whether expectations of stakeholders were met.

Figure 2.21: All combinations of Deliverables, Results and Expectations (Lewis, 2007: 291 - 293)

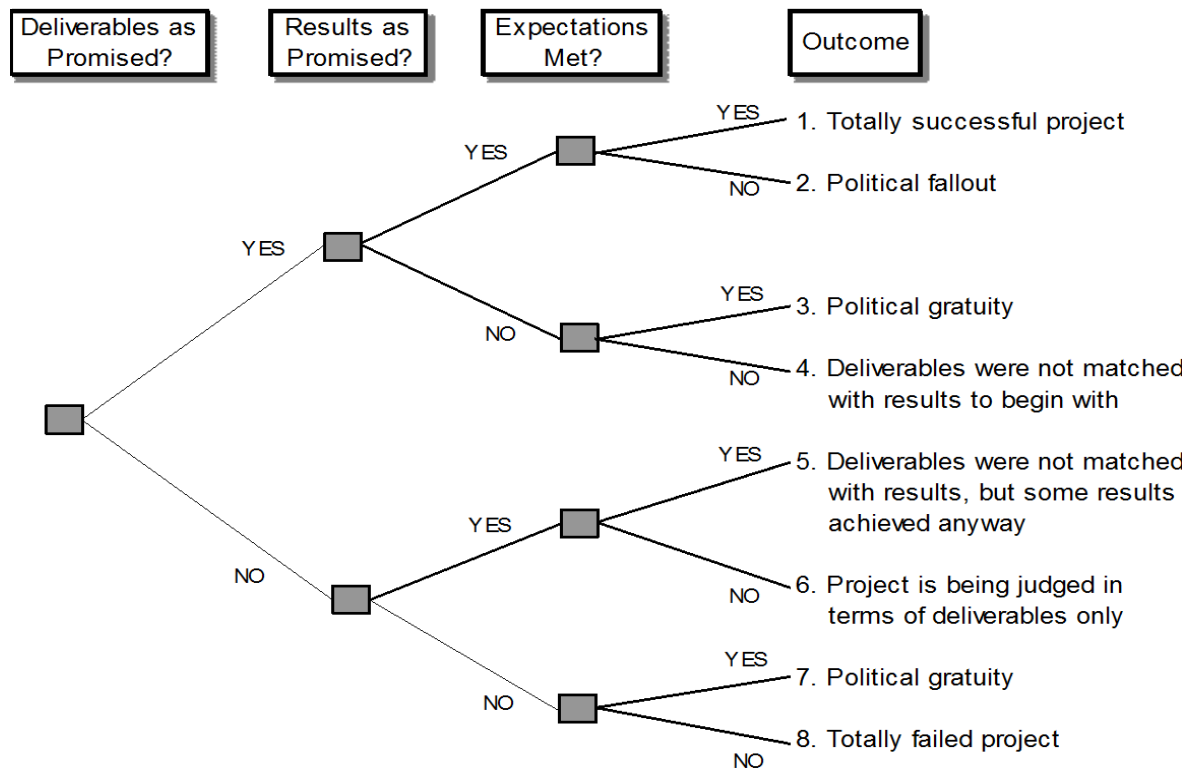


Table 2.8: Outcomes of the combinations of deliverables, results and expectations

Outcomes	Deliverables
Outcome 1	Project totally successful, all expectations and promised results were attained.
Outcome 2	Political fallout – Both deliverables and results are as planned, but the expectations have not been met resulting from a change of stakeholder / s or client representative / s midway through the project who have different expectations. PMs must monitor changing expectations.
Outcome 3	Political Gratuity – Deliverables are as promised, but planned results and expectations were not met. It may be that the deliverables were not matched with the results. If the expectations were met, it could either mean that everyone knew that there would be no result or the client is very forgiving.
Outcome 4	Similar to Outcome 3, except the stakeholder / client was not that forgiving.
Outcome 5	Deliverables were not promised, yet results were achieved and expectations were met. It could be that the deliverables were changed midway if results were to be achieved or the client had no idea what was planned or could not visualise what he was going to get.
Outcome 6	Deliverable incorrect, results were okay, but expectations were not met. The stakeholder / client held the PM to the original promises for deliverables, ignoring the fact that desired results were achieved.
Outcome 7	A truly forgiving stakeholder / client. Neither deliverables nor results were as promised, yet expectations were met. PM big friends with the client.
Outcome 8	Project totally failed and should be considered as such.

Sometimes clients simply expect too much from their design teams. They expect perfection. Any minor delay, added cost or design change is taken as a sign of incompetence on the part of the architect or engineer. Unreasonable clients are quick to file a claim or make a demand against a designer even though the cause of their upset is nothing more than a typical project snafu that can – and should – be resolved through amicable cooperation rather than antagonistic confrontation. Sophisticated clients, according to Camilleri and Clarke (2011: 1), are aware of the ups and downs of the design and construction process and usually work with the designer and contractor to remedy project upsets. However, clients unfamiliar with the trials and tribulations of a major project need to be educated on the process before design and construction begins. Regardless of what your client may think or expect. Perfection is impossible to attain. The best approach is to ensure that your client has realistic expectations.

2.6.2 CLIENT SATISFACTION

Mbachu (2003: 1) advocate that the South African building industry is reportedly beset with prevalence of client dissatisfaction. Considering that client satisfaction is the crucial variable

underpinning current and future prospects in the building industry. An investigation carried out by Ashley *et al.* (1987 cited by Nzekwe-Excel *et al.*, 2008: 1) on the determinants of the success of construction projects highlighted six criteria for measuring success: budget; schedule; client satisfaction; functionality; contractor satisfaction, and project-manager / team satisfaction.

Client satisfaction is derived through the value that the client perceives and the level of client satisfaction needed to generate loyalty is very high. Client expectations are a measure of the client's anticipation of the quality of an organisation's products or services. Mbachu (2003:1) adds that expectations represent both prior consumption experience, which includes some non-experiential information such as advertising and word-of-mouth, and a forecast of the organisation's ability to deliver quality in the future.

According to Hansemark and Albinsson (2004 cited by Van Haaften, 2010: 1), "satisfaction is an overall client attitude towards a service provider, or an emotional reaction to the difference between what clients anticipate and what they receive, regarding the fulfilment of some need, goal or desire." Mbachu (2003: 5) lists the factors that hamper the attainment of the satisfaction criteria at the end of construction in Table 2.9.

Table 2.9: Factors constraining the attainment of the satisfaction criteria at the end of the construction development phase (Mbachu, 2003: 5) - Part 1

	Subcomponents	Frequency (%)
A	Factors constraining the achievement of cost targets:	
1	Contractual and variation claims.	100
2	Hike in interest rate on project finance.	89
3	Improperly assessed or defined needs, giving rise to late changes.	72
4	Over budget in contingency sums to make up for poor risk assessment.	72
5	Inaccurate forecast / budgets due to inadequate feasibility studies.	67
6	Inefficiency in project cost management.	61
7	Abortive works due to design faults such as errors, omissions, insufficient information.	56
8	Material wastages.	56
9	Destructions and delays caused by site accidents, fire-outbreaks, and inclement weather.	56

Table 2.9 - Part 2

B	Factors constraining the achievement of time targets:	
1	Inefficient co-ordinations and supervisions.	100
2	Poor project planning and control.	100
3	Imposition of unrealistic time target by the client.	100
4	Delays due to late changes.	100
5	Technical / managerial inefficiencies e.g. wrong choice of workforce, methods and equipment, and lack of skills.	100
6	Poor communication e.g. insufficient or delayed design information.	100
7	Abortive works due to construction errors / misinterpretation of drawings.	100
8	Abortive works due to design faults, errors and omissions.	100
9	Design complexities and the problems of 'constructability'.	94
10	Wrong decisions by client and advisors e.g. wrong choice of procurement approach, contractors, and tendering approach.	89
11	Late payments for works duly executed and associated cash-flow problems.	83
12	Delayed inspection / instructions.	78
13	Delays in resolving site problems e.g. relocation of existing services.	78
14	Delays due to insolvency of contractor or subcontractor.	78
15	Contractor versus subcontractor rivalry.	67
16	Void / inefficiencies in supply chain management.	61
17	Destructions and delays caused by inclement weather, site accidents, fire outbreak, and alike.	61
18	Delays due to late ordering / delivery of materials.	56
19	Delays due to 'excessive' interference by client or his agents.	56
C	Factors constraining the achievement of quality targets:	
1	Poor workmanship due to inadequate / inefficient supervision.	100
2	Time pressure: crashed job execution to meet deadline.	100
3	Lack of technical and managerial skills.	100
4	Substitution of specified materials with inferior or defective ones.	83
5	Wrong specifications.	78
6	Wrong choice of construction methods and equipment.	72

Table 2.9 - Part 3

7	Inadequate motivation of workforce or inadequate remuneration needed for desired quality levels.	61
8	Non-conducive or congested working environment.	61
9	Absence of quality assurance processes.	56
D	Factors negating the perception of satisfactory attitude to service:	
1	Excessive contractual and variation claims.	100
2	Reluctance to effect client changes in good faith.	83
3	Poor relationship with the client - relations marred by disputes and rivalry.	78
4	Poor communication.	78
5	Lack of empathy - reluctance to see things from client's perspectives.	67
6	Lack of client-care showing no consideration for client's interests.	56

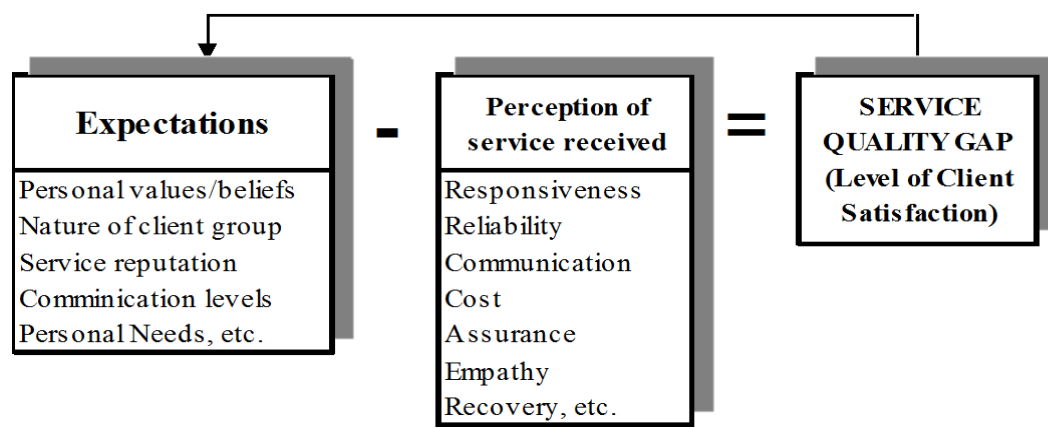
Over and above the need to address the factors raised in Table 2.9, Nkado and Mbachu (2003: 8) offer solutions to the problem of client dissatisfaction in the South African building industry which include:

- Cultivation of synergy amongst project team members through the application of supply chain management principles;
- Application of quality improvement techniques;
- Project staff empowerment;
- Understanding the client system and businesses;
- Detailed risk analysis;
- A rethink on the lowest bid / highest scoring syndrome in tendering;
- Choice of appropriate procurement approach, and avoidance of rigid preferences;
- Setting realistic project objectives;
- Provision of after-care services, and extension of responsibility into operation phases by service providers, and
- Surveys of user satisfaction / complaints, and of the in-use phase performance of the building, and applying lessons garnered to improve future developments.

Mbachu (2003: 9) also adds that there are three stages of client satisfaction / dissatisfaction in the procurement process: end of the development phase, the early part of the operation phase, and the 'harvest' and most crucial phase of the procurement process. Client dissatisfaction with any of the three stages is as a result of non-attainment of the satisfaction criteria operating at the given stage.

Figure 2.22 illustrates the determinants of client satisfaction that include access, availability, courtesy, friendliness, integrity, and commitment. Raising client satisfaction should include ensuring that expectations are realistic which in turn will improve the perceptions of service received. It is also important to establish what the client values most, e.g. reliability and quality, as this could also contribute to the client's level of satisfaction. Dissatisfaction emerges when the service received falls short of the expectations.

Figure 2.22: Client satisfaction determinants

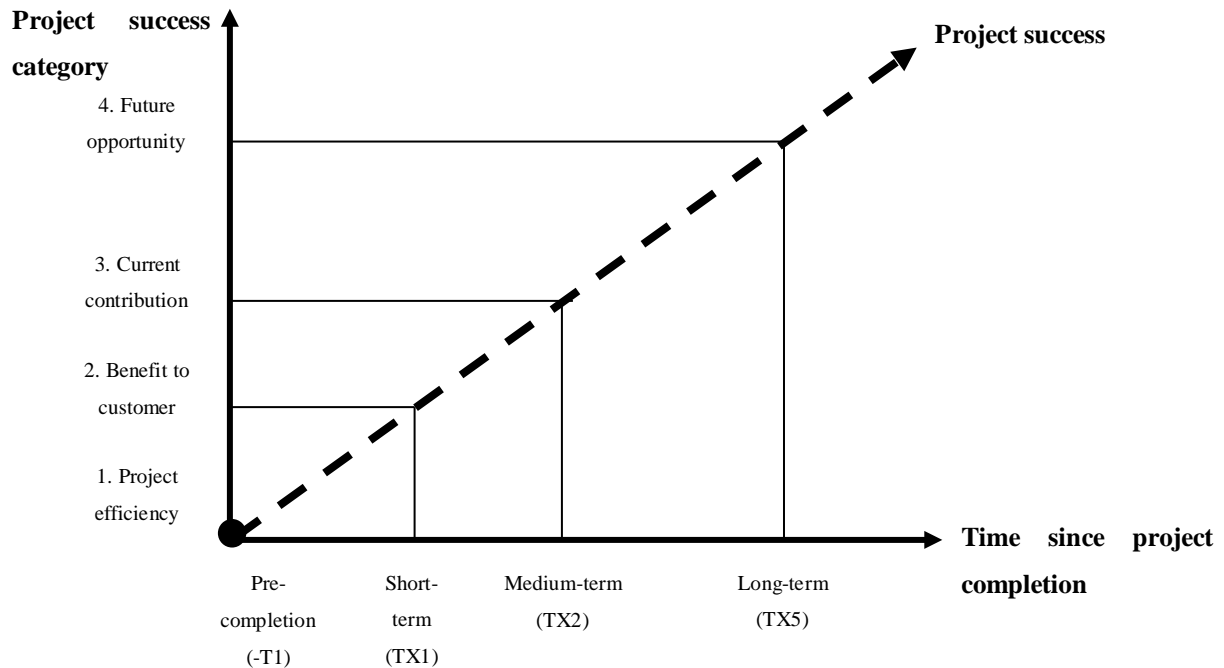


2.6.2.1 Variation of satisfaction levels over time

Mbachu (2003: 88-95) address the variation of satisfaction level over time whereby the satisfaction phenomenon is transient over time due to ephemeral nature of the criteria for assessment.

It is envisaged that the satisfaction concept and measurement will vary in the procurement process, whereby satisfaction at a distinct stage may be unique to that stage depending on the operating components involved. This concurs with Shenhar and Wideman's (1996 cited by Mbachu, 2003: 88) findings that "for a given project, the client's perception of success may change with time, since principal success criteria are time-dependent." Shenhar and Wideman illustrate the variation of project success criteria with time as shown in Figure 2.23.

Figure 2.23: Time dependency of project success (Shenhar and Wideman, 1996 cited by Mbachu, 2003: 88)



Shenhar and Wideman (1996 cited by Nkado and Mbachu, 2003: 89) list the measurable success criteria for each success category in Table 2.10 that offers some insight into possible ways of exploring client needs and satisfaction in the construction industry.

Table 2.10: Principal success criteria (Shenhar and Wideman, 1996 cited by Mbachu, 2003: 89) - Part 1

Success category	Measurable success criteria
<ul style="list-style-type: none"> Internal project objectives - Pre-completion. 	<ul style="list-style-type: none"> Meeting schedule; Within budget, and Other resource constraints met.
<ul style="list-style-type: none"> Benefit to client - short-term. 	<ul style="list-style-type: none"> Meeting functional performance; Meeting technical specifications and standards; Favourable impact on client, client's gain; Fulfilling client's needs; Solving a client's problem; Client is using product, and Client expresses satisfaction.

Table 2.10 - Part 2

<ul style="list-style-type: none"> • Direct contribution - medium-term. 	<ul style="list-style-type: none"> • Immediate business and / or commercial success; • Immediate revenue and profits enhanced, and • Larger market share generated.
<ul style="list-style-type: none"> • Future opportunity - long-term. 	<ul style="list-style-type: none"> • Will create new opportunities for future; • Will position client competitively; • Will create new market; • Will assist in developing new technology, and • Has, or will add, capabilities and competencies.

However, the success categories and the corresponding measurable criteria seem grossly inadequate to the needs and requirements of the modern day client. There is the need to explore further, other categories of client needs and effective ways of measuring the perceived levels of satisfaction derived by clients.

2.6.2.2 The procurement lifecycle chain of success or failure

Procurement, according to Hofacker *et al.* (2012: 1-3), refers to processing an order, starting from the demand for a new building until its delivery to the end-user. The process-cycle time refers to the whole procurement process of a construction project, defined as the process starting from the set-up of the first process step, i.e. demand formulation, continuing through order creation, planning, other intermediate steps and construction until the final delivery of the product to the client.

The South African Government is committed to transparent, accountable procurement processes that ensure all potential suppliers are given impartial and equitable treatment. It is especially important that government procurement takes place in a genuine, open and fair environment.

Public servants, according to the Ministry of Economic Development (MED) (2011: 5), must comply with five interrelated principles of probity in procurement:

- Acting fairly, impartially and with integrity;
- Being accountable and transparent;
- Being trustworthy and acting lawfully;
- Managing conflicts of interest, and
- Securing commercially sensitive and confidential information.

Procurement must be conducted with probity in mind, to enable purchasers and suppliers to deal with each other on the basis of mutual trust and respect, and enable business to be conducted with integrity. Probity principles, according to the MED (2011: 5), should be integrated into all procurement planning, and not treated as a separate ‘add-on’. Government agencies must ensure that systems, policies and procedures are established that provide accountability, are able to withstand public scrutiny and which preserve private sector confidence in the procurement process. This means undertaking due process, obtaining appropriate approvals and documenting decisions. Achieving an ethical, transparent approach requires that the procurement rules are clearly stated, well understood and applied equally to all parties.

The MED (2011: 6) argues that if the procurement process is executed well, according to the prescripts, each stage will deliver the required results and generate positive benefits. The positive benefits from one stage will lead to stronger results in the next. This continuous ‘chain of success’ results in increasingly beneficial outcomes and stronger overall results. Achieving strategic procurement outcomes involves setting strategic priorities and direction. The implementation links strategic planning with operational planning and financial planning and management.

The MED (2011: 6) also advocates that by adopting a structured approach to procurement planning will result in robust, objective analysis that informs the best methodology to approach the market and achieve optimal procurement outcomes. All of this means that resources – time, money and people - need to be effectively allocated and successfully used. The time taken to plan, research and analyse add significant value to identifying solutions that will meet the needs. A focus on relationship development and management means that less time is spent resolving issues and more time applied to assessing quality in delivery and identifying opportunities for cost savings and benefit gains. A strategic approach delivers greater value.

The MED (2011: 10) adds a number of drivers for successful procurement:

- Without a full understanding of the public policy / business needs that are to be addressed it is impossible to write a comprehensive specification of the required goods or services;
- If the specification of requirements is lacking the resulting evaluation criteria will not target the critical factors which determine success;
- If the supplier is selected on the basis of poorly crafted evaluation criteria the supplier may not have the appropriate capacity and capability to successfully deliver against the needs, and

- Without accurately describing the needs the resulting contract documentation, including the description of deliverables and key performance measures, will not lead to successful delivery. The needs will not be met and the procurement will have failed.

Hofacker *et al.* (2012: 1-3) state that the main purpose of an efficient procurement system is to facilitate:

- A reduction of cycle time;
- A reduction of variability;
- An increase in transparency, and
- Building continuous improvement into the process.

The Government of British Columbia (2010: 8) argues that the most important reasons for an efficient procurement methodology is to achieve best value for government, minimise the risks to government, and treat vendors fairly.

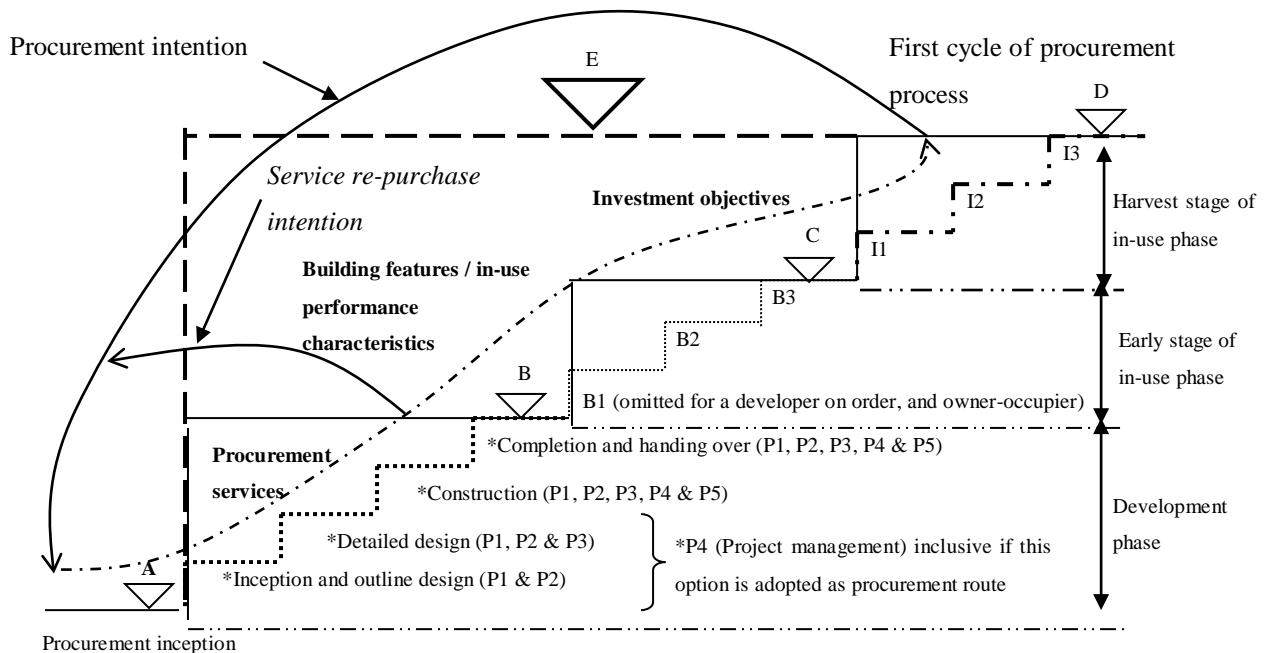
2.6.2.3 Monitoring transition phases of satisfaction

Client satisfaction, according to the ABB (2009: 42), equates to the received value in relation to established expectation, as perceived by the client. It is an important subject for all employees of the project-implementing organisation, such as the NDPW, to ensure that everyone in the value chain contribute toward achieving project success and ultimately client satisfaction.

Mbachu (2003: 90 - 91) advocates that there exists a high correlation between project success and client satisfaction, that demands monitoring project success at each distinct phase of the project by measuring the level of satisfaction the client perceives at that stage. However, in reality, the satisfaction level at one stage may not necessarily constitute building blocks for satisfaction at the next stage, but would build better client relations.

The progressive stages of client satisfaction in the procurement process are schematically illustrated in Figure 2.24, which shows that at the inception and outline design stage of traditional procurement process, the key procurement services are those of the professional team appointed to complete the planning. Satisfaction at this stage, as well as the 'detailed design stage' is governed by perceived performance of these professionals and the PM.

Figure 2.24: Progressive stages of client satisfaction in the procurement process (Adapted from Mbachu, 2003: 91)



Procurement services:

- P1: Quantity surveying
- P2: Architectural
- P3: Consulting engineering
- P4: Construction / project management
- P5: Contracting

Building features:

- B1: Features enhancing marketability
- B2: Client / user requirements
- B3: Functional performance

Investment objectives:

- I1: Returns on investment earnings / capital growth)
- I2: Business process enhancement / expansion
- I3: Market share growth or competitive advantage

Stages: A = Procurement inception stage; B = Satisfaction with procurement services; C = Satisfaction with building features / in-use performance characteristics; D = Satisfaction with the extent of fulfilment of investment objectives; E = Overall client satisfaction with the procurement

Construction and handing over stages involve all the role players. Satisfaction at these stages is thus measured from client's perceptions of the performance in each service. The overall satisfaction at the end of completion and handing over stage is governed by the extent of further fulfilment of key project objectives, namely, cost, time, and quality targets. At the end of the development phase, the subsequent satisfaction level is governed by the building features / in-use performance components and functionality. In order to fulfil the client's expectations that would lead to client satisfaction one must first establish their real needs and determine the project objectives.

2.6.3 Client needs

A key objective in any construction project is to fully implement the wishes of the client. The process for achieving this begins with the capture and representation of the requirements and

needs through verbal and written communication. Lee and Egbu (2006: 865) differentiate between needs and requirements to ensure client satisfaction. Very often the measurement of project success can be indicated by client's level of satisfaction. Lee and Egbu (2006: 866-867) argue that clients are most likely to be satisfied when their perception of the services provided in a facility, which may be different from that of construction professionals, matches or exceeds their expectations. In order to satisfy the client, it is essential to fulfil the stated and non-stated needs of the client. Lee and Egbu (2006: 871) argue that because clients' needs are very often not expressed clearly, the differentiation between needs and requirements will enable a better understanding of client requirements and how the identified requirements are able to meet the needs.

Mbachu (2003: 42) categorises different client needs from his research:

- Typical latent needs of public sector clients. Latent needs are the real needs and objectives existing in the mind of the client that may be concealed because they may have social, cultural, political or religious dimensions. Such hidden objectives may include the provision of status and prestige for the client. The existence and importance of these non-observable and latent needs in determining satisfaction may provide clues to the problems observed by Kometa *et al.* (1994: 12 cited by Mbachu, 2003: 38) in their remark that, "despite the numerous efforts to understand construction clients and their priorities, evidence abounds to suggest that they are largely misunderstood and dissatisfied with the performance of their consultants and contractors."

A successful project needs to benefit the client in such a way that generates value and if the scope and other objectives set for the project do not accurately match the needs of the client, some of the value generation potential for the client cannot be realised. This may be the case when the client has latent needs, i.e. needs that the client cannot explicate to the service provider or needs that the client is not even aware of (Slater and Narver, 2000: 120-128; Wagner and Hansen, 2004: 643-655). According to Kärkkäinen *et al.* (2003: 588-604), the question of fulfilling latent needs becomes even more difficult when the project that is delivered is eventually a means to fulfilled the needs of the client's clients, i.e. the local community which is typically the case in the construction industry. Anderson and Narus (2004: 460) also stress the importance of the willingness and ability of the service provider, i.e. the NDPW to tailor projects that match the needs of the client exactly and refer to this strategy of close cooperation with the client as client intimacy.

For the public sector, client latent needs for building projects may include:

- Political reasons;
- Socio-cultural benefits;
- Strategic imperatives, and
- Economic reasons although very seldom
- Stated needs of clients may vary, but typical stated needs of clients may include:
- Time and programme certainty;
- Controllable variation;
- Complexity;
- Quality;
- Price or cost certainty;
- Division of responsibility;
- Risk avoidance;
- Reporting intervals, and
- Competition.

The NDPW adds seven more stated needs:

- H&S compliance;
 - Environmentally compliance;
 - Job creation for the local community;
 - Safe construction site with accident free record;
 - Accessibility for the elderly and the disabled;
 - Establishing a conducive environment for visitors, and
 - The client's order of priority between cost, time, quality, social objectives, H&S, environmental compliance, aesthetics and functionality.
-
- Typical non-stated, but expected needs of clients are needs that may not be expressed, but which he or she expects from the service provider that may include the augmented and general services, over and above the core duties, which are covered under the stated needs. Papa, Michael and Selkowitch (1991: 404 cited by Mbachu, 2003: 39) also recognised the concept of 'non-stated, but expected needs' by advising that efforts should be made to find out what clients really need, even if it is not expressed, but only expected.

These may include the following:

- Empathy: Clients expect their views to be respected. It is advisable for the service provider to put himself or herself in the shoes of the client and see things from the client's perspectives, rather than insisting on the objective reality;
- Unbiased advice;
- Reliable and accurate information / reports;
- Honesty and integrity;
- Cordial relations;
- Value for money;
- Timeliness and comprehensiveness of service, and
- Assurance of quality of service and performance capabilities of service providers.

More must be done than just listen to clients say what they need in order to evaluate client needs properly. A way of doing this is to probe and ask questions until it is believed and truly understand those needs and the relevant issues. Furthermore, effective research is more than just giving the client answers to the questions they have. It is also about helping them determine what questions need to be asked as assumptions that may have supported successful outcomes in the past may have become outdate. It can be critical to a client to identify and test those assumptions and it often requires an outside perspective to accomplish this. This process ensures results that are directly relevant to the project's needs and that the answers derived are not limited by the assumptions made. Identify hidden assumptions that need to be tested to insure the answers provided will help the client make better decisions. The way questions are phrased can greatly influence the kinds of responses. It is important to help clients refine their information requirements and, ultimately, deliver information in a format most conducive to making the decisions that need to be made.

Defining the client's needs, according to Burke (2007b: 57), should be done systematically in conjunction with the client whereby trade-offs are identified and the needs be prioritised. Items of conflict should be discussed and resolved during the early stages of the project during which all decisions must be recorded to form the baseline project execution plan and design methodology and developing real project objectives. The needs could include:

- Functions – The product must carry out a certain function at a predefined rate;
- Environment – The product must operate in a specific environment conditions;
- Life Span – The product must have a working life of so many years;

- Budget – The project budget must not be exceeded by a certain percentage or specific amount;
- Efficiency – The product must be energy efficient with the minimum required ‘Green Building Rating’;
- Good practice – The ergonomics must be consistent with the latest accepted practice;
- Risk – The product must achieve reliability requirements. These may be quantified as mean time between failures (MTBF);
- Maintenance – Ease of maintenance and repair must be incorporated into the design;
- Redundancy – A predetermined level of system redundancy and interchangeable parts must be achieved;
- Standards – The project must meet certain specifications and standards;
- Regulations – The product must meet statutory H&S regulations;
- Local content – The product must be manufactured with predetermined value of local content;
- Manpower – The operational requirements must achieve predetermined manpower levels and automation;
- Expansion – The product must be flexible and provide opportunities for future expansion and up-grade;
- Schedule – The project must be operational by a predefined date, and
- Quality – The product must be manufactured by approved and accredited suppliers, if necessary pre-qualified by an audit.

The above list could be endless. However, many of the above items may be mutually exclusive, which means there will have to be some trade-off which must be agreed to with the client and all stake holders during the early stages of the project with all discussions recorded to form the basis of the design philosophy.

Research findings of the client’s real needs must focus on how the needs could impact on the project objectives, it must be solution oriented, and must be actionable. The client must agree to action that must be taken to meet the objectives prior to the commencement of the project.

2.6.4 PROJECT OBJECTIVES

Ascertaining the needs of the client is clearly very important, but it is not a sufficient condition to ensure the delivery of superior client value and satisfaction if it is not translated into project

objectives or concrete deliverables. A translation that is typically accomplished during the design phase of the project is often problematic as the service provider or implementing agent the NDPW and / or the consultant team, may fail to document some of the crucial requirements of the client, or may intentionally or unintentionally exclude certain requirements. A typical example within the NDPW's policies is not to include any minor capital works in repairs and renovations projects, which if brought about after the fact leads to increased costs and possible fruitless expenditure, and further disruptions of the client's daily operations, to cite one example.

2.6.4.1 Business objectives

Well-defined business objectives keep PMs and teams on track and stakeholders honest. Johnson (2007: 1-9) developed ten guiding principles for developing clear business objectives on projects:

- Same page - It is imperative that everyone has the same understanding of the project's business objectives. A project's vision needs to be clear, concise, and comprehensible, but it also has to be the same to all the stakeholders. It is imperative that everyone be on the same page. Conflicting vision causes conflicts, and conflicts can cause complexity. Complexity causes confusion and cost;
- Elevator pitch - Business objectives need to be comprehensible and concise. A complicated explanation generally denotes a lack of understanding. A clear and concise interpretation of the objectives and concrete deliverables can smooth any project's rough spots and help minimise challenges and obstacles to success;
- Big picture - Always look at the big picture. Key activities in the planning and requirements phase of any project should be to determine whether the project is achievable within the period specified, make sure it is doable for the money being allocated, and verify that the requirements match up with the big picture. Why bother to initiate a project if it cannot be relatively assured of its success and that it fits into the big picture? Achievability, as it relates to the big picture should be continuously monitored throughout the project's lifecycle;
- Speed - There is a need for speed, for time is the enemy of all projects. "One of the keys to speed is more chaos, less stability," said Tim Chou, former president of The Oracle Business Online. This is a lesson that is very difficult because most people have grown up in organisations that are stable, and these organisations teach employees lots of ways to create a stable organisation. This is antithetical to changing quickly. On the other hand, too

much change too quickly can destabilise projects or organisations. Knowing when to push the envelope is a delicate balance;

- **Yardstick** - Projects need measurements to stay on track. Obviously, there are things beyond anyone's control that can negatively impact a project, but many of these factors can also be mitigated through risk and dependency management. Project objectives need to be clearly stated and defined, and they need to be concrete, verifiable, and visible deliverables as measurable items. The project plan needs to contain adequate stepping-stones. To deliver each stepping-stone requires the appropriate combination of resources available: people, time, money and skills. Measurements are a barometer to assess a project's status. While often viewed as a necessary evil, they provide a wealth of information and serve a multitude of purposes. Measurements quantify a 'gut feeling' of how well or how poorly a project is doing. If undertaken regularly, measurements provide the opportunity for not only ticking off successes, but also allowing for early recognition and correction of problems, justification for resources and funding, and preventive planning on future projects. Measurements only have value if they are meaningful. That is why the Standish Group is against milestones. Milestones are false indicators of progress; they provide an artificial sense of security. It must be understood what is being measured, why it is being measured, and if or how it can be measured. Too often measurements take on a life of their own and become projects in and of themselves, rendering them meaningless instead of valuable indicators and tools for communication. Project role players are thus cautioned of analysis paralysis;
- **Collaboration** - Collaborate with project contributors and stakeholders. Correctness in translation of what people are saying back and forth plays an extremely important role in what is going on. Establishing clear and concise project objectives is imperative. Collaborating with all project contributors and stakeholders can help recognise weaknesses and tension points, determine priorities, as well as identify potential setbacks. However, all too often, many stakeholders are indifferent or unaware of what the business hopes to achieve and the expected benefits derived through the project. Consensus can occur when able to analyse, learn from, and build upon a combined knowledge base through stakeholder collaboration and feedback. In order to do this an open environment needs to be created where honest mistakes or wild ideas are not penalised or criticised. Collaboration can also foster ownership. Stakeholders are inclined to have a stronger commitment and sense of ownership of the project if they feel their participation and contributions are valued. Input and feedback from stakeholders to create that sense of ownership can be encouraged through collaboration techniques. It is also important to celebrate successes, even the little

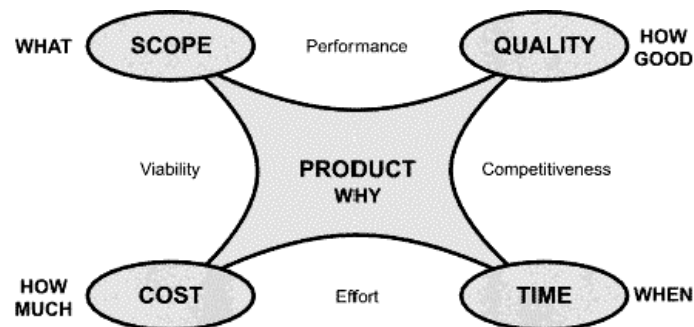
victories. A job well done may be its own reward, but more tangible rewards in the form of money, promotions, or attendance at recognition events can substantially increase commitment from participants;

- Peer review - A strong foundation for a peer review process can greatly benefit projects. Fewer than fifty percent of organisations today have a formal review process for their projects. Peers in various departments could review the business objectives to see if they are clear and comprehensible. Peer reviews also act as another sanity check to foresee any issues or concerns. Peers often bring to the table their own experiences and can add value to the project. Peer review is a great tool for ensuring clear and comprehensible business objectives;
- Too many cooks - Too many cooks spoil the broth. PMs in the field could come across problems and not know where to turn for a solution. Many stakeholders would input into the projects that causes scope creep and delays as the PMs would not know which route to follow. It is not that the field lack resources, rather it is the opposite. The solution is the creation of a project support office. The network comprised all the resources, manuals, databases, service reps, consultants and engineers. As problems occurred, the PMs can create both a problem-identification and a solution path. This becomes a case. The network of people would collaborate on the solution path to create this case and it was entered into a case-based reasoning database. The next time a PM encountered the same problem, the system would direct him or her to that case and the according solution, and
- Homework - Always do thorough research for every project. Many times what seems clear to some is confusing to others. Theories need to be tested to make sure the project objectives are understood, through research or by establishing a focus group, which can also provide an opportunity for both collaboration and conflict feedback. Johnson (2007: 9) advises that should there be a need to do many tests then it would be more feasible to develop the expertise in-house within the PSO.

Wideman (2001: 5) argues that success criteria should not be defined by cost and time objectives, but rather by scope and quality objectives, especially quality. Currently, on the majority of projects, managing projects necessitates proactive trade-offs between the four objectives as depicted in Figure 2.25. The type and nature of the project as well as the phase and stage of the project's lifecycle governs the extent of the trade-offs and the basis of successful decision that will ultimately influence the level of success achieved.

However, within the NDPW a fifth dimension is added which are the governmental social economic objectives, which include implementing the EPWP on projects whereby temporary employment and training is granted to local communities within the vicinity of the project, and awarding bids to previously marginalised contractors who are registered on the contractor incubation programme (CIP), all which adds to the trade-off between cost, time, and quality.

Figure 2.25: The trade-off between project objectives (Wideman, 2001: 5)



Another important factor is the compliance with H&S regulations and environmental plans while the building is under construction as well as the H&S factors built into the design to ensure a safe and fully functional working environment. Burke (2007: 18) argues that it is a fundamental requirement for the PM to establish who the stakeholders are, besides the client, and analyse their needs and expectations to define, at the outset, the purpose of the project, its scope of work and objectives.

Many project management courses and books leave the impression that scope management is a straightforward application of well-defined processes: create a scope statement; develop a work breakdown structure; establish a change process, and respond to change orders. However, the need to manage the change process is far more challenging. To deter the ‘change stampede’, a PM must develop the ability to manage the entire project environment by anticipating problems before they manifest and by continuously managing group expectations concerning change.

Burke (2007b: 62) highlights the importance to evaluate options and alternative ways to produce the product once the client’s needs and the possible constraints in terms of the project, both internal and external have been identified:

- Construction method – Is there a simpler way to construct the building?
- Cost – Can the budget be reduced or what will the end value be if the project is phased?
- Design – Is there a simpler design configuration?

- Equipment – Has the use of different equipment and machines been considered?
- Management – Have alternative management systems been considered?
- Materials – Can cheaper materials or more environmental friendly materials be used?
- Resources – Can the work be automated to reduce the labour requirements?
- Technology – Has the latest technology been considered?
- Time – Can the project be completed quicker or should the project be phased due to current financial restraints?
- Trade-off – Has the trade-off between cost, delivery schedule and technical performance been quantified?
- Quality – Can the product be made to a lower level of quality, which is acceptable to the client, but more cost effective and quicker to produce?

2.6.4.2 Formulating project objectives

The project objective consists of the business benefits that an organisation expects to achieve because of spending time, money and exerting effort to complete a project. Project objectives are often confused with project products e.g., the objective of our project is to construct a new police station. This sort of objective fails the ‘so what?’ test. That is, what is the result of constructing the police station? This result should be noted as the project objective.

Alexandrou (2011: 2) distinguishes between three different project objectives:

- Main objectives - the reasons for doing the project;
- Additional objectives - the benefits achieved almost as side-effects, not the reasons for doing the project, and
- Non-objectives - the benefits that are not to be expected because of the project. Care should be taken to list only such non-objectives that can be reasonably expected by project sponsors or other interested parties, but are not going to be achieved by the project. For example, a project to construct a new police station might not necessarily reduce crime in the immediate vicinity, although this might be expected.

Mochal (2011: 1) distinguishes between goals and objectives which are statements that describe what the project will accomplish, or the business value the project will achieve. The definition of goals and objectives is more of an art than a science, and it can be difficult to define them and align them correctly.

Goals are high-level statements that provide overall context for what the project is trying to achieve, and should align to business goals. Using the police station scenario, a goal of a project might be to “improve policing of the local community and to reduce response time to a maximum of fifteen minutes because of its locality.”

Objectives are lower level statements that describe the specific, tangible products and deliverables that the project will deliver so that it can be evaluated at the conclusion of a project to see whether it was achieved or not. Objectives should not be vague and should be concrete statements describing what the project is trying to achieve. According to Van der Walt and Knipe, 1998: 95 a well-worded objective will be ‘SMART’:

- Specific - The more precise the target, the greater the chance to achieve it;
- Measurable - Measure cost, time, quality, and quantity. If it cannot be measured, you’re at the whim of the client;
- Agreed to - Make sure all necessary participants agree. If that seems difficult, remember that if they do not agree now, they will probably make trouble later;
- Reachable – If it is impossible, it’s hardly worth trying, and
- Timely or time-bound - A well-defined deadline helps everyone know what is expected.

As an example, an objective could be to construct a new police station by 31 March 2014.

- Note that the objective is much more concrete and specific than the goal;
- The objective is measurable in terms of needs assessment, approved space norms, costs, quality in terms of applicable standards, and the time limit for completion;
- It is assumed that the objective is achievable and realistic, and
- The objective is time-bound, and should be completed by 31 March 2014.

Objectives should always refer to the deliverables of the project. Other although indirect objectives sometimes referred to as sub-objectives of the project could include:

- The project must be phased to facilitate the completion and commissioning of the community service centre by 31 May 2015;
- 100 local job opportunities must be created;
- 50 Beneficiaries must be trained as artisans;
- Minimum permissible safety audit while under construction may not be less than 90%;
- Contract period may not exceed the original contract period of 30 months by more than 10% i.e. three months;
- Original approved budget may not be exceeded by more than 5%, and

- All quality specifications must comply with South African National Standards (SANS), and SAPS Five Star specifications.

Takim and Akintoye (2005: 1-5) state that the recent growth of interest in benchmarking as it relates to successful project performance can be ambiguous and becomes extremely complicated if all the parameters are not studied and the most important identified. Takim and Akintoye (2005: 1-5) also argue that it is difficult to give an unequivocal verdict on the success or failure of a project, as some criteria are successfully met while others are not. In addition, the different perspectives of key players in the development of a construction project will explain the reason why it could be considered the same project as being both partly successful and partly unsuccessful. It would be ideal if a project could result in an overall win-win situation for all parties involved, but in reality the ideal seldom happens.

2.6.5 THE BRIEFING DILEMMA

In terms of the NDPW, the consultant team views the departmental PM as the client although they are the implementing agent, while the actual client is the user department. The NDPW facilitates project implementation on behalf of the client. Inevitably some confusion arises hence the user department will be referred to as the client throughout this research relies on the departmental PM to do the project brief which is twofold. Firstly it has become the PMs' responsibility to relay the purpose, needs and objectives of the client, and secondly, to communicate project implementation methodology, information available, lines of communication, and roles and responsibilities. Confusion often occurs when a poor brief is given at the start of a project. Manning (2009: 1) argues that valuable time can be wasted because the work parameters were not agreed upon from the outset or the PMs were not clear on your client's objectives. This inevitably has a negative impact on both the result, and the relationship with your client. The quality of briefs received from clients and the departmental PMs can vary dramatically, from a thorough and well thought out brief to little or no brief at all.

2.6.5.1 The project brief

The importance of a compressive brief cannot be underestimated. The briefing process should be an interactive process between the client and professional teams that must be facilitated by the PM by making use of various tools and techniques to source the requirements and demands from

client while also focusing on important factors such as team building, getting information, analysing, managing changes of requirement, recording, and communicating.

Clients should be able to identify and state their strategic needs and thus improve the effectiveness of the project briefing. The contributions from the more formally constituted client, design and construction teams charged with the responsibility of the delivering the project are crucial to the success of the project. However, it is increasingly recognised that external participants such as end users and members of the community may have a useful role to play in influencing the location, form, content, and sometimes even the timing of the project. In fact, the multiple attributes that contribute to the success of a project are influenced by a multitude of decisions by various individuals, bodies, and organisations. Decisions made during the formative and early stages in the life of a project are seen as critical factors that must be taken into account if a project is to be regarded as being successful, especially by the end user and members of the community.

2.6.5.2 A framework for project briefing

Griffiter (2010: 2) recommends constructing a conceptual framework when interacting with the client in structuring the project brief by asking questions with the following examples:

- Who is the ultimate client or end user? What are they expecting?
- What was done in the past? Is the client looking for something different?
- What do they think they already know?
- What do they need to know?
- What are the consequences of not doing the project or not doing it a certain way?

According to Vale (2009: 3), the client's brief is the document that communicates the client's project vision to the consultant team. It documents the project deliverables and objectives and describes what the project will deliver upon completion. It should define requirements applicable to: commercial-, contractual-, financial-, quality-, and assurance issues; time; functional and other requirements, which may be important such as H&S, pre- and post-construction, environmental and sustainability issues.

Ryd (2004: 231-249), highlights a few more important reasons for having a thorough project brief where the project brief serves as a baseline for:

- Importance of, and the need to succeed with the project;

- Future reference;
- Future decisions;
- Control and managing of design, and design changes;
- Establishing and accepting a process of change, and
- Evaluating project outcomes.

Bowen *et al.* (2004: 4) list following factors emanating from their research with the exception of maintenance costs that ought to be given consideration at the project briefing stage:

- Extent of client involvement in the project;
- Roles and responsibilities of all the role players;
- Accountability of role players;
- Scope control measures;
- Project cost and cost control measures;
- Commencement date of construction;
- Functionality of the building;
- Aesthetics of the building;
- Executability of the project;
- Consideration of future maintenance cost, and
- Communication networks - clear management structure, methods of liaison and communication channels.

Within the NDPW, there are a number of additional factors that should also be given consideration at the briefing stage:

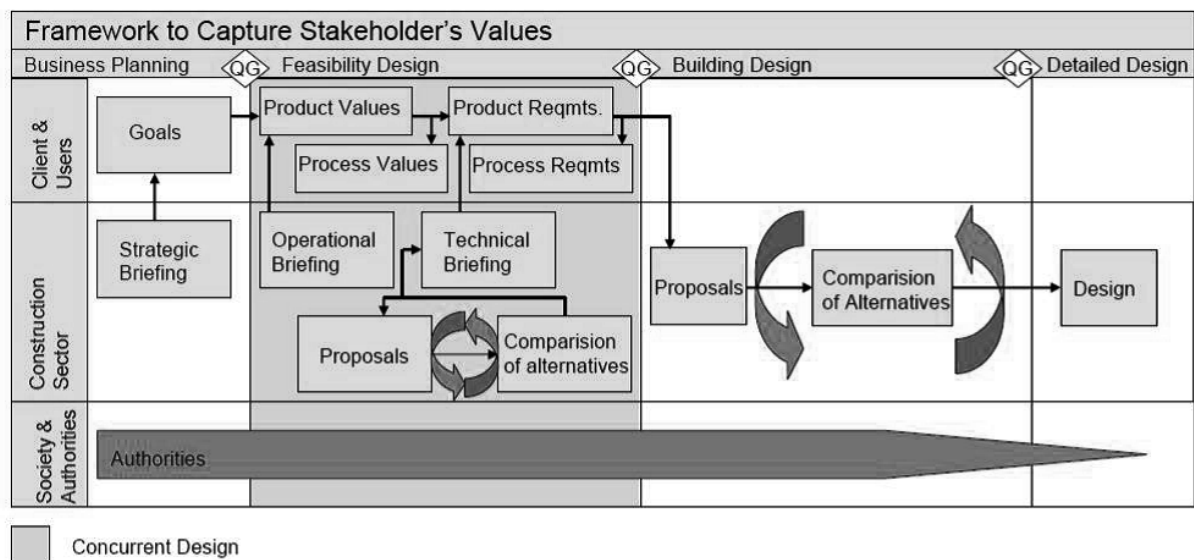
- Procurement method;
- Quality;
- H&S requirements during construction, and final product;
- Environmental impact;
- Standards and specifications including Green building requirements;
- Formal training on HIV and AIDS and technical skills transfer, and
- Contract participation goals by making use of local suppliers, labour, contractors, and subcontractors as black economic empowerment initiatives.

2.6.5.3 Capturing stakeholder values

According to Dooley and Sormunen (2010: 3-4), a detailed briefing process should be utilised as the framework in which the needs, wishes, ambitions, and values of all stakeholders are defined and taken into account in the design process. The briefing process, being an integral part of the design process, should be iterative and move from the general to the particular.

Project goals are defined at the beginning and values are derived from these goals that are translated into design requirements. The design requirements eventually become performance requirements. Values are considered as features of the final building design that are a result of the stakeholders' collective efforts while realising the client's business case. In order to incorporate the individual values of the multiple stakeholders into a final technical brief, design team communication is of utmost importance. The process requires a holistic approach and a more balanced team than is usually found in construction projects. All project values must be first defined in non-technical user language, i.e. functional needs, only then can they be translated to performance language, i.e. performance requirements and specifications, and eventually to technical language in terms of technical requirements and specifications.

Figure 2.26: A framework to capture stakeholder values (Dooley and Sormunen, 2010: 3)



The strategic brief, as illustrated in Figure 2.26 is the first action of the briefing process is for the client, users and local authorities to define the goals of the project and elements required to fulfil the ambition of the client. This shall be done via the strategic brief that occurs during a pre-project stage referred to as the business planning stage. At the end of the strategic briefing sessions there shall be a quality gate where goals shall be analysed.

The operational brief defines the design requirements in terms of functionalities, dimensions, and performance. It is independent of whatever choice is made to provide the final building whether it is a new build, refurbishment or by rearranging existing spaces. Traditionally only the client, users and local authorities are involved in this process however; it is advisable that all project stakeholders are involved. The goals defined in the strategic brief are translated to product and process values. The product values aid in understanding the purpose of the building and present the goals for the building and its performance. The process values are derived from the product values and are used to select suitable construction processes. Process values define how the product values can be achieved effectively and precisely during the design process. During this process, the stakeholders act collaboratively to process the values and requirements into a building design. At the end of operational briefing sessions, there shall be a quality gate where each participant shall examine the values and requirements for any conflict with local regulations.

The technical briefing is the method of defining the quantitative performance parameters of the completed building and is the starting point for the eventual building specification. However, as this process is still an element of the feasibility design stage and thus takes place before the design phase, the performance parameters must allow flexibility. Typical performance parameters may be as follows: energy targets; life cycle costs; alternative building layouts; project schedules, and other key performance indicators. Once the feasibility design stage has been completed the client body shall decide whether to continue with the project or not. Once again, at the end of technical briefing sessions there shall be a quality gate where the parameters shall be analysed.

Table 2.11: An example of the goal, value, requirement, and parameter hierarchy table (Dooley and Sormunen, 2010: 4)

Goal	Value	Design Requirement	Performance Parameter
Reduce lifecycle costs	Energy consumption	Heating energy	21 kWhr / m ³
		Electrical energy	78 kWhr / m ²

Clients' ability to communicate project requirements to the project team has the potential to directly influence the quality of the design brief and the attainment of clients' objectives. Bowen *et al.* (2004: 4) add that the client must have a clear understanding of their own requirements and needs that should at least include the following:

- Real accommodation needs;
- Functionality of the building - facilities and operational flow within the building;
- Performance requirements and standards;
- Budget limitations;
- Time schedules and the required delivery date, and
- Procurement method and processes.

The NDPW adds the following key priorities of the government of South Africa:

- H&S requirements both during construction and the final product;
- Legislative requirements such as municipal by-laws, and national building regulations;
- Use of local suppliers, labour, contractors, and subcontractors as black economic empowerment, and
- Training programmes on projects and skills transfer via the EPWP and the NYS programmes.

Given that clients can potentially affect the success of the project, and the importance of briefing to the attainment of client satisfaction, it must be noted that problem areas are often associated with the nature of the client. There are serious shortcomings relating to the experience level of the client representatives as well as the NDPW PMs attending briefing meetings. Problems experienced by the design team in the communication, and gathering of information often result from a failure to establish an understanding with the client at the beginning of the briefing process. In order to generate this understanding, it is important to establish the nature of the client at the outset (Newman *et al.* 1981 cited by Bowen *et al.*, 2004: 1).

Furthermore, according to Bowen *et al.* (2004: 10), clients may need to understand and express more clearly their requirements for the functional performance of their buildings. The issue of operational and maintenance cost should receive explicit attention in the briefing process. The earlier constructability is considered, the better the potential outcomes. More emphasis needs to be given to good, well-written project briefing with less reliance upon the inconsistency of oral briefing. The adoption of formal brief-elicitation procedures is recommended. Clients should give explicit attention to the establishment of effective project communication networks. If the briefing process is to impact positively on the attainment of client objectives, the process needs to be more effective. Client organisations need to define their needs more clearly and communicate these requirements to implementing agency and the project team members unambiguously.

2.6.5.4 Brief developing drivers

The founding argument of Othman *et al.* (2005: 69) was that factors that drive changes to the construction project brief and the background to those factors must be considered for achieving client satisfaction. Othman *et al.* (2005: 70) introduced the concept of dynamic brief development (DBP), which permits changes throughout the project life cycle. Thirty main project brief developing drivers are identified as illustrated in Table 2.12:

Table 2.12: Project brief developing drivers (Othman *et al.*, 2005: 70) - Part 1

No.	Brief developing drivers.
1	Unclear and incomplete project brief.
2	Improper feasibility studies.
3	Inappropriate communication between the client and the designer.
4	Lack of understanding of the client organisations.
5	Stakeholders change project requirements and have second thoughts at later stages.
6	Initiating value engineering changes.
7	Project users are not involved in the briefing process.
8	Project users appear at later stages.
9	Users exaggerate their needs.
10	Lack of understanding different users' culture and traditions.
11	Designers ignore the client role and behave unilaterally.
12	Uncoordinated and incorrect construction documents.
13	Brief information is still being given during later design and construction stages.
14	Lack of design experience.
15	Lack of presentation and visualisation of design.
16	Lack of regulatory up-dating.
17	Lack of functional, aesthetic, safety requirements and constructability.
18	Whole project life not considered.
19	Lack of consideration of environmental requirements.
20	Inadequate available design time.
21	Restricted design fees.
22	Unforeseen conditions.
23	Changing government regulation and codes.

Table 2.12 - Part 2

24	Lack of information provision.
25	Lack of communication and co-ordination between government authorities and design firms over planning and approvals.
26	Meeting new technology changes.
27	Responding to market demand.
28	Upgrade project facilities.
29	Materials are no longer available in market and use better substitute materials.
30	Eliminate proven poor quality materials and equipment.

Project brief development could also be seen as scope creep from the project initiation phase up project closure. The project stages where brief development takes place are illustrated in Table 2.13. The rate of development reduces as the project information becomes clearer and more concrete according to Othman *et al.* (2005: 73).

Table 2.13: The stages of brief development relative to its measures of central tendency and dispersion (Othman *et al.*, 2005: 74)

No.	Brief developing stage	Mean
1	Appraisal.	4.09
2	Strategic briefing.	4.05
3	Outline proposals - concept design stage.	3.92
4	Detailed proposals - sketch plan approval stage.	3.87
5	Final proposals - final working drawing stage.	3.25
6	Production information - planning completion stage.	3.13
7	Tender documentation.	2.19
8	Tender action - invite bids.	2.00
9	Mobilisation - tender adjudication stage.	1.69
10	Construction to practical completion.	3.60
11	After practical completion.	2.39

However, the rate of brief development increases again during construction. This could be attributed to drivers such as:

- Stakeholders changing the project requirements and having second thought at later stages;
- Uncoordinated and incorrect construction documents;

- Brief information is still being given during later design and construction stages;
- Lack of consideration of environmental requirements, and
- Unforeseen conditions - possible poor risk management.

As would be expected, while some drivers have very high influence on brief development, others do not. Othman *et al.* (2005: 75-78) differentiate between drivers in terms of their real influence on brief development. Firstly, the drivers with very high influence in order of influence are:

- Stakeholders change project requirements and have second thoughts at later stages;
- Uncoordinated and incorrect construction documents;
- Brief information is still being given during later design and construction stages;
- Materials are no longer available in the market or better substitute materials are identified;
- Lack of information provision;
- Meeting new technology changes;
- Lack of regulatory up-dating;
- Project users are not involved in the briefing process;
- Unforeseen conditions;
- Lack of understanding different users' culture and traditions;
- Eliminate proven poor quality materials and equipment;
- Lack of design experience;
- Changing government regulation and codes;
- Responding to market demand;
- Improper feasibility studies;
- Restricted design fees;
- Lack of understanding of the client organisations, and
- Inappropriate communication between the client and the designer.

Secondly, the drivers with average to high influence include:

- Unclear and incomplete project brief;
- Designers ignore the client role and behave unilaterally;
- Lack of communication and co-ordination between government authorities and design firms over planning and approvals;
- Lack of presentation and visualisation of design;
- Users exaggerate their needs;

- Upgrade project facilities;
- Project users appear at later stages;
- Inadequate available design time, and
- Lack of functional, aesthetic, safety requirements, and constructability.

Finally, the drivers with very low-to-low influence with RIIs less than 0.600 include:

- Lack of consideration of environmental requirements;
- Whole project life not considered, and
- Initiating value-engineering changes.

Client organisations are the key originators of the needs and brief development. Othman *et al.* (2005: 85-86) state that project clients are generally dissatisfied with design firms' and implementing agencies' performance as client advisors. Clients view design firms as originators of brief development and risk sources because they may produce uncoordinated and incorrect construction documents, specify building materials or technologies that are either not produced anymore or outdate. Design firms may also ignore the role of the client and behave unilaterally. All these can hinder the construction process due to contradictions between the construction documents, time delay due to selecting and importing substitute materials and modern technologies as well as future changes because of implementing decisions that do not reflect the client's point of view.

Othman *et al.* (2005: 86) asks: 'Where does the PM fit in?' There is a real need to set out a detailed brief development management system that incorporates both value management and risk management. This system should enable the appropriate project participant make informed decisions at the right time for the benefit of the client. The system must facilitate feedback to both client organisations and construction professionals to enable lessons to be learned in order to improve the briefing process for future projects. Understanding the relationship between the factors that drive brief development and the various project team members will facilitate managing brief development in a way that increases client satisfaction and engenders the performance of the project.

Furthermore, when a process gets the commitments of all role players the chances of success is so much greater. However, if a project is not aligned with the business's strategy it will likely fail regardless of how well it is run as it can end up having no ownership by most stakeholders.

As with the NDPW's present scenario there are too many parties that could detrimentally influence the project brief development which include the client also known as the user department, which include the clients' National head office, provincial office and the local user, the NDPW's head office, regional office, professional services and departmental PMs, design firms / appointed consultants, contractors and to a lesser extent the end user that could also include the local community. However, the departmental PM is responsible and is held accountable by the client if anything goes wrong. Hence, the necessity to have competent, suitably qualified and experienced PMs matched to the specific requirements of each project.

All projects run into problems and no project is immune from delays / failure. The potential troubles are well known: missed deadlines; underspent budgets; unmet expectations, and internal resistance. However, how the project team responds to problems determines the project's eventual level of success or failure. Past mistakes must be avoided and effective response is required to address problems as they arise. The trick is to manage a project in a proactive way, preventing some problems, and minimising the effects of others. With proper planning, support of senior management, sound project management, and active client involvement, project teams can bypass or overcome many common mistakes that could lead to client dissatisfaction.

2.7 CLIENT CONTRIBUTION TOWARD PROJECT SUCCESS

2.7.1 WHO IS THE CLIENT?

Bowen *et al.* (2004: 1) state that the construction industry potentially has a higher proportion of dissatisfied and critical clients than any other industry. Kometa *et al.* (1994 cited by Alinaitwe, 2008: 73) conclude that there is evidence to suggest that clients are largely misunderstood and dissatisfied with the performance of their consultants and contractors. If that is true, do clients themselves play their roles in satisfying other stakeholders and achieving project success? Mbachu and Nkado (2006: 31) argue that the construction industry's service providers have been unable to fully grasp the issue of client satisfaction largely because of the absence or lack of awareness of a mechanism for measuring satisfaction in the procurement process. Tindiweni (2006: 10) found that shortcomings of labour management such as poor motivation, unfair wages and lack of training contributed to client dissatisfaction. Yet the clients themselves and implementing agents such as the NDPW can directly influence these rudiments as well as the outcome of the project. Table 2.14 illustrates the core differences between the client as the end user and the NDPW, the implementing agent as a client.

Table 2.14: Condensed responsibilities of the clients as the end users and the NDPW as the implementing agent

Clients as the end users.	The NDPW as implementing agent.
Capital Works Projects	
<ol style="list-style-type: none"> 1. Identify need. 2. Initiate and program project. 3. Provide needs assessment of accommodation requirements. 4. Budget and provide funding for both planning and construction. 5. Provide specific requirements and standards, as projects are specific in terms of functionality, flow, safety and security. 6. Approve concept designs and sketch plans in terms of aesthetics, accommodation requirements and functionality. 7. Approve final designs. 8. Fully involved in the design process and throughout all project phases up to final delivery and project closure. 	<ol style="list-style-type: none"> 1. Facilitate the planning by appointing suitable consultants upon receipt of a planning instruction to proceed with the project. 2. Approve sketch plans in terms of aesthetics, accommodation requirements, functionality technical aspects and standards. 3. Appoint consultants to oversee H&S on site. 4. Approve final designs, planning and documentation. 5. Appoint contractors. 6. Manage the construction phase up to final delivery and project closeout.
Planned Maintenance Projects	
<ol style="list-style-type: none"> 1. Provide specific requirements and standards, as projects are specific in terms of functionality, flow, safety and security. 2. Approve concept designs and sketch plans in terms of aesthetics, accommodation requirements and functionality. 3. Fully involved in the design process and throughout all project phases up to final delivery and project closure. 	<ol style="list-style-type: none"> 1. Identify need. 2. Initiate and program project. 3. Budget and provide funding for both planning and construction. 4. Facilitate the planning by appointing suitable consultants upon receipt of a planning instruction to proceed with the project. 5. Approve sketch plans in terms of aesthetics, accommodation requirements, functionality technical aspects and standards. 6. Appoint consultants to oversee H&S on site. 7. Approve final designs, planning and documentation. 8. Appoint contractors. 9. Manage the construction phase up to final delivery and project closeout.

The success of a project depends as much on the client as it does on the PM, consultants and contractors. A client is generally seen as the person or firm responsible for commissioning and paying for the design and construction of a facility and is usually the owner of the facility being commissioned according to Alinaitwe (2008: 73). However, Boyd and Chinyio (2006: 42),

broaden the definition to include representatives of the owner to act with delegated authority of the owner.

Capital Works projects are funded by the national government departments who are then seen as both the client and the end user while the NDPW acts as the project implementing agent. This confusion has fused into a situation where certain historic 'client' responsibilities are transferred to the NDPW as the implementing agent (IA).

2.7.2 ROLES AND RESPONSIBILITIES OF THE CLIENT AND THE NDPW

Mbachu and Nkado (2006: 43) state that clients' needs and requirements in the development process can be categorised broadly into design, management, and construction services. Construction clients, according to Alinaitwe (2008: 77), have project needs such as timeliness of completion, aesthetics, cost of the project, and safety of production. These needs are part of project schemes and should be satisfied by project and building teams.

The NDPW as the implementing agent has the responsibility of appointing design consultants who are able to offer designs that are not only safe to use, but also are being built safely. The NDPW must appoint a contractor who is competent and can build the project in a safe way. Fellows *et al.* (2002: 134) advise clients and owners to scrutinise the safety records as a pre-qualification for selection of tenderers.

Alinaitwe (2008: 75) lists the main roles of construction clients, which is divided between the client as the end user and the NDPW, the client as implementing agent (Table: 2.15). The objective of Alinaitwe's (2008: 76-77) research was to review the roles of clients in the building industry and to find out whether the clients are carrying out those roles in order to have an efficient construction process.

The findings of Alinaitwe (2008: 77) and the present situation within the NDPW is deemed comparable. Alinaitwe (2008: 77) found that the majority of the clients do not attend the scheduled meetings regularly. Lack of regular attendance at meetings implies that the clients do not always keep track of the project developments. This might lead to variations for which the client might not have a clear background.

The broad definition of the client raises a host of issues such as the decision-making powers of the client, the level of influence the client possesses, and the requirements of the client. There is also the issue of the nature and type of clients. Another division differentiates the paying client

from the end user, which is applicable to planned maintenance projects within the NDPW who fund and implement the projects while the other national government departments are both the clients and in some instances the end users.

Table 2.15: Roles of clients in the construction industry (Adapted from Alinaitwe, 2008: 75)

Role	Responsibility
Supervise the implementation of works on a timely basis.	NDPW
Carry out evaluation and give feedback for improvement of future projects.	Both
Attend site meetings to get to know the progress and contribute to solving problems.	Both
Determine the employment of the contractor in case of persistent default.	NDPW
Approve and pay money due to the contractor as agreed.	NDPW
Handle claims and disputes in a timely manner.	NDPW
Provide adequate time for the project's completion.	Both
Provide information in time for any variations.	Both
Provide clear roles and responsibilities of the parties involved in the project.	Both
Select suitable professionals, contractors and suppliers.	NDPW
Determine the securities and guarantees required for the project.	NDPW
Inform the stakeholders about the project.	NDPW
Appoint competent supervisor / clerk of works for the construction stage.	NDPW
Provide for H&S of workers including funding.	Both
Enable the contractor to arrange insurance for the works.	NDPW
Adequate preparation of contract documents including drawings.	NDPW

The majority of the contractors, according to Alinaitwe (2008: 77), are paid within less than 21 days from the date of certification. However, more than 33% were paid in a period beyond one month. On a number of occasions, contractors are paid beyond the time stipulated in the conditions of contract. This leads to low morale on the part of contractors. Delay in payment also leads to delay in other activities due to the knock-on effect of cash flow problems. The South African government is taking measures to improve the performance of contractors, as the public clients generally are seldom good clients because of poor financial planning and management as well as a lack of interest and a sense of ownership. Various South African government-implementing agencies have forced numerous consultants and contractors into bankruptcy because of non-payment.

Alinaitwe (2008: 77) confirmed that the average cost of variations as a percentage of the contract sum was 30%. Incomplete briefs (27%), incomplete designs (21%), and changes in design (14%) caused the majority of the variations. Although most of the architectural and structural designs are complete by the time the bids are invited, most of the mechanical and electrical designs are incomplete. The tendency to start work even when the designs are incomplete is a major source of variations.

Alinaitwe (2008: 77) also affirms that more than 90% of construction clients do not support training. Lack of training has a major bearing on the quality of skills available in the market. Lack of skills was found to be a major factor affecting both productivity and quality. The industry is comprised of many small- and medium-size enterprises (SMEs) that do not want to invest in training, and rather opt to seize the opportunity of undertaking the relatively unattractive construction contracts on unattractive markets and the rural communities.

Alinaitwe's (2008: 77) survey indicated on a five-point scale where 1 represents 'strongly agree', 3 represents 'neutral' and 5 represents 'strongly disagree' that the clients:

- Appointed the design team to carry on with the construction ($\mu = 1.39$);
- Selected suitable consultants for the work ($\mu = 1.75$);
- Were involved in the design process ($\mu = 1.90$);
- Appointed competent supervisors to supervise the construction works ($\mu = 1.95$);
- Respected the consultants' advice ($\mu = 1.98$);
- Consulted the relevant stakeholders before commencing construction works ($\mu = 2.22$);
- Acquired the permits to enable the works to proceed smoothly ($\mu = 2.40$);
- Appointed a competent main contractor ($\mu = 2.45$);
- Appointed competent nominated subcontractors for the works ($\mu = 2.46$);
- Nominated suitable suppliers / contractors ($\mu = 2.63$), and
- Provided clear roles and responsibilities to those brought onto the project ($\mu = 2.78$).

Architects are not sure whether clients provide adequate support to the contractors in ensuring the safety of workers ($\mu = 2.97$). This partly explains the reason why there are many accidents in the building industry. The majority of the architects believe that the productivity of the workers is influenced by the way the clients play their roles ($\mu = 2.78$). When asked to give one role that the clients should improve in order to increase the productivity of the workers, the majority (40%) would prefer to see the payments made are on time. Others would prefer to see more

respect to the consultants, while others would prefer to see more involvement in the design process and quick decision-making by the client, both as the end-user and the implementing agent.

The importance of appointing suitably qualified and experienced consultants was established by Sutton's (2011: 1) analysis of the factors that have the greatest impact on generating overall satisfaction with results achieved when working with consultants. These factors include those that are under the control of the consultants, as well as those that clients control.

The survey showed that 70% of all consultant engagements do not fully deliver the results that the clients expected. Although clients acknowledge the strengths of consulting firms in the areas of budget management and familiarity with project content, results show that these do not contribute strongly to consultants delivering results that meet or exceed expectations. Rather the survey results showed that if the consultants pay attention to the quality of the individual consultants assigned and maintain focus on the assignment, then they would have the greatest probability of producing results that satisfy their clients. The users of consulting services such as the NDPW, according to Sutton (2011: 1), should realise that they need to play their part by selecting the right consulting firm in the first place and to make sure that the roles assigned to the consultants are appropriate.

Sutton (2011: 5) adds that there was no correlation between the type, size, or duration of the project and the overall satisfaction level, confirming that overall satisfaction is based on selecting the right consultant firm and individual consultants, and suitably qualified and experienced contractors, irrespective of the nature of the project.

Sutton (2011: 7) argues that organisations planning to engage consultants should focus on the following key areas in order to increase the likelihood that they will be satisfied with the results produced by the consultants:

- Select the appropriate type of firm for the project under consideration-evaluate prospective firms to determine that the work they are proposing is in their core competency;
- Define roles that are valid for external consultants to fill;
- Do not be overly influenced by the possibility of access to broader knowledge and expertise than that which the PMs and own organisation have themselves;
- Focus on the quality of the individuals who will be assigned to the engagement, rather than the credentials of the consulting firm as a whole, and

- Once a firm is engaged, keep them focused on the original assignment—do not distract them with other potential projects until they have successfully delivered on their current engagement.

2.7.3 CLIENT RESPONSIBILITY TOWARD ACHIEVING PROJECT SUCCESS

Austen (2011: 1) argues that clients can easily fall into the trap of either devolving all responsibility to the project team or not engaging as an active part of the team or they can be overly involved to the point at which it has become disruptive. The client is an integral part of the project team and they have a responsibility to the PM to play that part with enthusiasm and through open engagement.

Austen (2011: 1) argues that a client can contribute to project success in the following manner:

- Understanding what it is the clients are actually looking for from the project in the first place. Too often project teams have had to deal with an ever-evolving project scope because the client is not quite sure;
- Participating actively in review sessions e.g. design reviews and speaking up if they are not happy with something;
- Putting their ideas forward – the clients viewpoints are as valuable as that of the team;
- Knowing what they do not know and being prepared to accept the project teams' expertise when appropriate without trying to second guess;
- Appreciate the work being put in and feed that back to the project team, and
- Being open to challenge to inform the client of alternatives, as the client is not always right.

A 'competent client' who commissions construction work, according to the Construction Client's Group (2008: 1-3), should demonstrate certain behaviours:

- Leads by example, supports and seeks to continually improve the H&S culture and accepts that H&S is a significant business risk. This may even go as far as understanding behavioural safety and the benefits it brings;
- Understands the importance of planning early in a structured way, including the execution of work and / or the provision of services by all of the project team including themselves;
- Establishes when the work is notifiable and register the commencement of the works with the Department of Labour at the earliest opportunity;

- Establishes realistic aims and objectives for H&S from their own perspective regardless of, but relative to, project size. They encourage suppliers to implement systems and processes supporting these aims and objectives;
- Engages the right people, based on the nature of the project and its final use. They consider the whole life cycle of the facility being constructed including operational management issues such as cleaning and repairs, and demolitions;
- Understands the importance of supply chain management and the replacement of a 'silo mentality' with an 'inclusive team approach' to include suppliers;
- Recognises that poor H&S performance is often accompanied by poor quality work and projects that are difficult to build are often difficult and expensive to maintain;
- Recognises that on site H&S standards are a good indicator of how well an organisation and individuals manage risk;
- Ensures that those within their own organisation have received sufficient training and are competent to assess and work with other team members;
- Create teams based upon the competence and abilities of individuals and do not base selection solely on job descriptions;
- Ensures that occupational health issues are given sufficient prominence within the supply chain;
- Has access to professional H&S advice. Ideally this should be someone from within their organisation who understands the client's business activity;
- Knows when and how to access other professional support who will have sufficient knowledge and hence a team approach must be considered;
- Obtains evidence to confirm the competencies of the consultants and contractors including obtaining and taking up practical references. Prior to the start of the contract, all appropriate documentation including evidence of relevant insurances, should be provided / exchanged as necessary;
- Only appoints designers and contractors after their H&S competency has been reviewed as part of their overall assessment and found acceptable. This can be completed through a client's own investigations or where there is obvious benefit through a recognised accreditation consultant appointed by the client. A competent client considers H&S, and is prepared to disqualify a contractor from the tender process for a poor H&S record even if other elements of the tender application appear excellent;
- Ensures that appropriate arrangements are in place for ensuring there is clarity of contract management responsibilities, emergency procedures and reporting requirements;

- Does not ask for risk assessments and then just file them. Good practice involves having all relevant H&S documentation assessed or reviewed and, where necessary, questioned;
- Is not afraid to be considered 'Interfering', that is being proactive, undertakes, as necessary, structured reviews of projects and implements any findings. Recognises the need not to take over the responsibilities of those with separate obligations delivering the project. For the H&S agent to visit the site regularly is good practice for ensuring H&S in contracted work. This should also include spot checks, formal performance audits and regular monitoring / reviewing meetings. These may be undertaken on the clients' behalf by appointed professionals if the client does not possess resource with the necessary qualifications and experience;
- Insists that all personnel including subcontractors involved in a construction project receive appropriate induction prior to them starting work on the site with appropriate refresher training as and when necessary, and
- Also understands the importance of leading on other issues such as sustainability, environmental and quality, and promote and support training of any form especially skills development and transfer on projects.

Both the NDPW and the clients have huge responsibility for any project. The NDPW, as the implementing agent must facilitate the appointment of suitably qualified and experienced consultants and contractors to mitigate risks associated with improper planning and poor execution of the works.

On the other hand, if the client loses focus or is never fully engaged in the project, then the project team is faced with the situation where the project deliverables will most likely not meet the client's expectations. Active client and end-user involvement throughout all lifecycle phases of the project is a key driver for a successful project. The end-users are powerful as in the end they are a key stakeholder in the overall success of the project. To ensure their buy-in and satisfaction it is essential that client's end-users are part of the project team, and that they are involved during requirements gathering, design, construction stage and final handover stages. Far too often, lack of buy-in by the true end users causes major client dissatisfaction. The building may satisfy every requirement, pass acceptance procedure and receive signoff by the client's representative, but it could fail to pass the most important test, the end-user acceptance. The client's involvement, and in particular the end-user participation throughout the project lifecycle, could be the difference between project success and failure.

2.8 ORGANISATIONAL LEARNING AND CHANGE THROUGH PROJECT MONITORING AND EVALUATION

Organisations depend on the people in their systems to develop a culture of innovation and change. It is people who will push for change and can therefore not remain untouched by the turbulence of the world in general, rapid changes in information technology and the changing work patterns.

The quality movement of the 1980s has enticed the majority organisations to accept the need for continuous improvement. Deming (n.d. cited by in Lewis, 2000: 324) states: “There are two kinds of organisations – those that are improving and those that are dying. The organisation that is standing still is dying – it is just that no one knows yet.”

One of the findings of the quality movement was that the person closest to the job is most likely to be the best-suited person to improve it who must become involved in the organisational design. Lewis (2007: 341) states that the consequences of not involving employees in the improvement process are low employee commitment to the job, incorrect estimates of cost, time, and other factors, omissions of work, unnecessary delays in processing and various other resulting delays and constant errors. Lewis maintains that this often happens when only senior management or policy makers design the processes without consultation, or do not support interventions raised from the employees. This is also seen in projects when everybody except the person who is going to do the work, is involved with from the project’s initiation, does the planning, formulation and structuring.

The purpose of this section is to give the reader an overview of what programme and project monitoring and evaluation entails, its necessity and value, and not to elaborate in depth on the actual processes and steps involved in developing a project evaluation programme.

2.8.1 DEFINITION OF TERMS

The vast amount of literature available pertaining to project evaluation could be confusing as various authors use different terminologies that are very closely related e.g. reviews, follow-up, monitoring, audit, control, assessment, and scrutiny. This has become such a problem that experts have expressed concern about the possibility of the concept losing all its meaning. There are however other feedback mechanisms, in addition to evaluation, which could be used to improve decision-making. For the benefit of the reader, Table 2.16 briefly distinguishes between

evaluation and the other feedback mechanisms. A programme consists of a collection of projects that seek to meet a defined set of goals and objectives and programme evaluation determines the value of this collection of projects, e.g. all the projects for the SAPS or Justice. Project evaluation focuses on an individual project funded under the umbrella of the programme. Lewis (2007: 175) maintains that proper project control, monitoring and evaluation are necessary if project objectives are to be met. The design of a project control system is very important, as is the practice of proper evaluation methods.

Lewis (2007: 182) states: “ ... to evaluate a project is to determine if the overall status of the work is acceptable, in terms of the intended value to the client once a job is finished.” Lewis also states that project evaluation appraises the progress and performance of the job compared with what was originally planned. Evaluation assesses what was achieved, the process, i.e. how it was achieved, and the degree of positive charge, i.e. quality and usefulness of the end product.

Table 2.16: Differences between evaluation and other feedback mechanisms

Mechanisms	Evaluation
Scientific studies	Evaluation focuses on practical use of information.
Traditional audits	Evaluations study public spending from a wider viewpoint – also questioning whether the objectives of the programme are appropriate and efficiently and effectively achieved.
Monitoring	Evaluation is often conducted as a single effort and seeks to gain more in-depth information of a programme in question, although the existence of well-functioning, regular monitoring systems is often a necessary basis for successful evaluations.
Performance measurement	Evaluation strives for more as it tries to find explanations for observed outcomes and understand the logic of the intervention. However, performance measurement is often identified as a form of evaluation.
Policy analysis	Evaluation focuses on <i>ex post</i> assessment. Policy analysis is sometimes defined as <i>ex ante</i> evaluation in studying future policy options.

However, in order for evaluation to be effective, there must be an effective project control system, since no evaluation can be successful unless proper control methods are first employed.

Programme or project evaluations are systemic, analytical assessments, addressing important aspects of a programme or project and its value, and seeking reliability and usability of findings.

2.8.1.1 Project control

Burke (2007a: 112-114) states that the project control process integrates and co-ordinates the contributions of all the stakeholders, which keeps the project team interested in the project as it is assured that things will change once the project has started. Project control guides the project plan to completion.

Project control, according to Egeland (2009: 2), must be seen as a proactive approach to controlling a project to ensure that the project objective is achieved even when things do not go according to plan. Egeland (2009: 3) argues that the objective of control is to deliver what has been promised, and that maintaining control must be thought of in terms of minimising the deviance between the current project status and the anticipated end product. This means that overall project control requires an eye on the future, as the following formula shows:

Calculated Present Variance + Estimated Future Variance = Final Project Variance

Maintaining proper control, according to Egeland (2009: 3), requires consideration of the following three parameters: 1) current position compared to where the project should have been; 2) what must still be done that could affect the outcome of the project, and 3) what would be the end result compared to the planned result. Bear in mind that (1) and (2) are used primarily as internal control functions that are used for evaluating (3). Maintaining proper control facilitates taking intelligent and meaningful corrective action with the end in mind.

Egeland (2009: 3) adds that the most fundamental measure of project success relates to meeting the agreed-upon targets, the targets that must be controlled. Two of the targets pertain to the consumption of resources:

- Schedule: Was the project completed on time?
- Cost: Was the project completed within budget?

The other two targets are related to the deliverables of the project:

- Functionality: Do project deliverables have the expected capability?
- Quality: Do the deliverables perform as well as promised?

However, controlling cost and schedule gets too much attention and the performance are not as closely monitored, as they should be. This is a major oversight that should be avoided. Continued monitoring, reporting and forecasting must take place during project implementation, and the forecasts compared to the project execution plan. Deviations must immediately receive attention. Without a detailed plan, there is no baseline for comparison, no determination of deviation, and hence no satisfactory basis for corrective action. A successful project management control system is a system that monitors and responds by a control action as early as possible after an event. The control process starts with establishing a baseline plan that shows how the project scope will be accomplished on time and within budget. Once the client and PM as well as the project team have agreed upon the baseline, planning can commence. Regular reporting periods should be established for comparing actual progress with planned progress.

Egeland (2009: 3) argues that the shorter the reporting period the better the chances are of identifying problems and taking corrective action timely. It may be daily, weekly or monthly depending on the complexity or overall duration of the project. Two kinds of data are collected during each reporting period. Firstly, data on actual performance that includes the actual time that activities were started and / or finished and the actual costs expended and committed, and secondly, information is gathered on any changes to the project scope, schedule and budget. This could be initiated by an unexpected or unforeseen occurrence such as labour strikes or change in requirements, could initiate changes. The project control process continues throughout the project life cycle.

The key to effective project control is measuring actual progress and comparing it to planned progress on a timely and regular basis and taking corrective action immediately, where necessary. The process involves gathering data on project performance, comparing actual performance to planned performance and taking corrective actions if actual performance is behind planned performance.

2.8.1.2 Project monitoring and evaluation

Project monitoring is a continuing function that targets primarily early indications of progress or lack thereof in the achievement of programme or project objectives. It is the systemic collection of routine financial and management information during the implementation of a project, programme or policy.

Kusek and Rist (2004: 11) argue that results-based M&E systems can be a powerful public management instrument in helping to measure performance and track progress in achieving desired goals. The necessity of measuring results, according Kusek and Rist (2004: 11) is that: the level of success cannot be determined unless results are measured; success cannot be rewarded unless evident; failure must be recognised to take corrective actions and learn from it, and being able to demonstrate results will win public support and regain trust.

Kusek and Rist (2004: 12) define monitoring as “a continuous function that uses the systematic collection of data on specified indicators to provide management and the main stakeholders of an on-going development intervention with indications of the extent of progress and achievement of objectives, and progress in the use of allocated funds.”

Kusek and Rist (2004: 12), and the ILO (2008: 3) define evaluation as “the systematic and objective assessment of an on-going or completed project, program, or policy, including its design, implementation, and results. The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact, and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the future decision making on project implementation.” Table 2.17 illustrates the complementary roles of results-based monitoring and evaluation.

Table 2.17: The complementary roles of results-based monitoring and evaluation (Kusek and Rist, 2004: 13)

Monitoring	Evaluation
<ul style="list-style-type: none"> • Clarifies program. 	<ul style="list-style-type: none"> • Analyses why intended objectives results were or were not achieved.
<ul style="list-style-type: none"> • Links activities and their resources to objectives. 	<ul style="list-style-type: none"> • Assesses specific causal contributions of activities to results.
<ul style="list-style-type: none"> • Translates objectives into performance indicators and sets targets. 	<ul style="list-style-type: none"> • Examines implementation process.
<ul style="list-style-type: none"> • Routinely collects data on these indicators, compares actual results with targets. 	<ul style="list-style-type: none"> • Explores unintended results.
<ul style="list-style-type: none"> • Reports progress to managers and alert them to problems. 	<ul style="list-style-type: none"> • Provides lessons, high lights significant accomplishments or program potential, and offers recommendations for improvement.

Monitoring gives information pertaining to where a policy, program, or project is at any given time, and over time relative to respective targets and outcomes. It is thus descriptive in intent. Evaluation gives evidence of why targets and outcomes are or are not achieved. It seeks to

address issues of causality according to Kusek and Rist (2004: 13), with the particular emphasis on the expansion of the traditional M&E function to focus explicitly on outcomes and impact.

The tasks, milestones and budget that are documented in the original plan are the starting point for project control and co-ordination that form the checkpoints to be used to monitor progress. Baker and Baker (2000: 274) emphasise what needs to be monitored to keep things running smoothly, regardless of the project's magnitude:

- The status of work being performed as compared to the plan or schedule;
- The volume of work being completed and quality of work being produced;
- The costs and expenditures as compared to the anticipated cash flow analysis;
- The attitudes of people working on the project or involved with the project including clients and management, and
- The cohesiveness and co-operation of team members.

Consistent monitoring and project control, from start to finish, is very important as any problems could crop up at any given time within the project. According to Baker and Baker (2000: 275), monitoring should accomplish the following:

- Communicating project status and changes to other project team members;
- Informing management, and clients about the status of the project;
- Providing the justification for making project adjustments, and
- Documenting current project plans and progress compared to the original project plan.

Appropriate monitoring generates the minimum data necessary for analysis and uses the simplest effective data collection methods. Monitoring is mainly an internal process carried out by those implementing the project. Preferably, monitoring should involve all stakeholders. The results need to be shared with relevant stakeholders and fed back into implementation.

There are various ways of assessing and learning from projects, the most important according to the ILO (2008: 2) are:

- Project monitoring focusing on activities and outputs, and its contribution to outcomes. Monitoring is the continuous observation of a project's progress by systematically gathering key performance data for regular analysis, which is generally routine financial and management information. Monitoring provides useful information at the evaluation stage and can also be regarded as an input to the evaluation stage;

- Annual project reviews focusing on outputs and outcomes are a form of self-evaluation during which the stakeholders reflect upon how well the project is progressing towards achieving its objectives, taking into account available monitoring and evaluation data;
- Interim and final evaluations focusing on the outcomes of the project and the likelihood that they will achieve impact. Evaluations provide an opportunity for in-depth reflection on the strategy and assumptions guiding the project. They assess progress made towards the achievement of a project's objectives and may recommend adjustments to its strategy. They are also a means by which to assess how well project-level actions link to and support higher-level organisational strategies and objectives as articulated in the construction programme and budget;
- Impact assessments determining whether project interventions have contributed to longer-term impact. They can be ex-post evaluations of projects or they can be part of thematic or country programme evaluations that also consider linkages between different projects and interventions, and
- The relevant partners analyse the information from monitoring and evaluation to ensure that appropriate decisions are made in a timely manner. This can improve project implementation and the probability that it will attain the planned objectives.

Key principles in project evaluation according to the ILO (2008: 3) are to:

- Improve performance and contribute to organisational learning;
- Reinforce accountability and transparency;
- Form part of a larger dynamic planning and review process;
- Are oriented by national and ILO longer term priorities and objectives;
- Focus on results and assume that projects are managed for results;
- Provide for the participation of national constituents and other partners;
- Reinforces the project stakeholders creating a sense of joint ownership;
- Are supported through a highly credible, independent and transparent process;
- Confine the process to one which is technically and administratively reasonable, and
- Are conducted in an ethical way including the responsible handling of confidential information.

Lewis (2007: 205) suggests that generally when approaching project monitoring only three questions must be asked:

- What is the actual status of the project?
- If a deviation exists, what caused it?

- What should be done about it?

In answering the last question, there are three possible responses: ignore the deviation; take corrective action, or revise the plan.

If the deviation is not significant, it may be ignored. Any drastic deviation must be attended to. Lewis (2007: 25) states: "...what is meant by significant should be determined in the planning stage of the project." In general, a deviation should exceed five percent to be considered significant, since most control systems cannot maintain a tighter tolerance. Within the NDPW the financial control measures requires zero tolerance. Any financial implication must be dealt with immediately.

There are many applications for results-based M&E according to Kusek and Rist (2004: 19-20), as the needs for accountability and demonstrable results have grown, so have the uses and applications for results-based M&E systems that include:

- Project-, program-, and policy applications. Results-based M&E systems have been successfully designed and used to monitor and evaluate at all levels;
- Internal and external applications. M&E can also be conducted at local, regional, and national levels of government. Thinking of M&E in relation to levels of administrative complexity, from project to program to policy, or geographically, the applications are evident although they need not be identical. The internal uses come into play as the information from the M&E system is used as a crucial management tool for the public sector manager in achieving results and meeting specific targets. Information on progress, problems, and performance are all-important to a public manager who is striving to achieve results. Likewise, the information from an M&E system is important to those outside the public sector who are expecting results, wanting to see demonstrable impacts from government action and on taxpayers' monies, and hoping to build trust in a government that is striving to better the life of its citizens;
- Good M&E systems are also a source of knowledge capital that enable governments and organisations to develop a knowledge base of the types of projects, programs, and policies that are successful, and, more generally, what works, what does not, and why. M&E systems can also provide continuous feedback in the management process of monitoring and evaluating progress toward a given goal. In this context, they promote organisational learning, and

- Transparency and accountability. M&E systems can also aid in promoting greater transparency and accountability within organisations and governments. Beneficial spill over effects may also occur from shining a light on results. External and internal stakeholders will have a clearer sense of the status of projects, programs, and policies. The ability to demonstrate positive results can also help gain greater political and popular support.

Kusek and Rist (2004: 19-20) highlight the fact that there are also organisational and political costs and risks associated with implementing results-based M&E systems. However, there are also crucial costs and risks involved in not implementing such systems.

The ten-step model to design, build, and sustain a results-based monitoring and evaluation system of Kusek and Rist (2004: 23–24) differ from others because it provides extensive details on how to build and maintain, and perhaps most importantly to sustain a results based M&E system. It also differs from other approaches in that it contains a unique readiness assessment. Such an assessment must be conducted before the actual establishment of a system.

The readiness for an assessment is, in essence, the foundation of the M&E system. Just as a building must begin with a foundation, constructing an M&E system must begin with the foundation of a readiness assessment. Without an understanding of the foundation, moving forward may be fraught with difficulties and, ultimately, failure. Kusek and Rist's (2004: 23–24) ten-step model consists of:

- Conducting a readiness assessment;
- Agreeing on outcomes to monitor and evaluate;
- Selecting key indicators to monitor outcomes;
- Baseline data on indicators. What is the progress to date?
- Planning for improvement and selecting results targets;
- Monitoring for results;
- The role of evaluations;
- Reporting findings;
- Using findings, and
- Sustaining the M&E system within the organisation.

2.8.1.3 Project reviews

A project review is an exercise performed at any given point within the project life cycle to determine and compare the actual status of the project with the planned objectives at that specific point in time. This can be done at various intervals to assess progress and report back to stakeholders.

Lewis (2007: 175) distinguishes between three kinds of project reviews:

- A status review concentrates on whether the performance, cost (expenditure), time and scope targets are being met: Is the project on schedule and within budget? Is the scope correct? What about safety and security aspects on the project? Are the performance requirements okay?
- A design review applies only to projects in which something is designed: Does it meet the design requirements? Is it user friendly? Is it environmentally acceptable? What about safety and security aspects pertaining to the institution?
- A process review focuses on how the work is done. Only two questions are asked: What is done well? What must be improved? Lewis (2007: 175) cautions asking questions in a negative context: What went wrong? Lewis maintains that it would create the impression of being out on a witch-hunt and / or trying to blame someone. The whole idea is to get as much possible feedback from the project team, the client and the contractor or service provider not to make the same mistakes on the next projects.

A project could also be evaluated during the status and design reviews, which will then be aimed to determine whether the required end result will be accomplished. Lewis (2007: 177) also lists some of the general reasons for conducting periodic project reviews:

- Improve project performance together with project management;
- Ensure that quality of project work does not take a back seat to schedule and cost concerns;
- Reveal developing problems early, so that action can be taken to deal with them;
- Identify areas where other projects, whether current or future should be managed differently;
- Keep clients informed of project status. This will also help ensure that the completed project will meet the needs of the client, and
- Re-affirm the organisation's commitment to the project for the benefit of the project team.

2.8.1.4 Measuring performance

The purpose of performance measurement is to help organisations understand how decision-making processes or practices led to success or failure in the past and how that understanding can lead to future improvements. Key components of an effective performance measurement system according to the NRC (2005: 7) include:

- Clearly defined, actionable, and measurable goals that cascade from organisational mission to management and program levels;
- Cascading performance measures that can be used to measure how well mission, management, and program goals are being met;
- Established baselines from which progress toward the attainment of goals can be measured;
- Accurate, repeatable, and verifiable data, and
- Feedback systems to support continuous improvement of an organisation's processes, practices, and results.

The NRC (2005: 10) adds that good performance measures have the following characteristics:

- Measurable, objectively or subjectively;
- Reliable and consistent;
- Simple, unambiguous, and understandable;
- Verifiable;
- Timely;
- Minimally affected by external influence;
- Cost-effective;
- Meaningful to users;
- Relate to mission outcome, and
- Drive effective decisions and process improvement

Serrat (2010: 1) states that performance measures need to be balanced to provide a complete assessment of the management of a project and be combinable across projects to assess the performance of the program and across programs to assess the impact of department-level policies and procedures. If any organisational entity can identify a measure that has meaning and identity throughout an organisation, such a measure is very valuable and should be the goal of performance measure development. Today performance is appraised the world over. However, according to Serrat (2010: 1), in the public sector, the need to sell the idea that management is improving means that indicators proliferate, on the whole, without regard for unintended

consequences from the practice. Performance indicators according to Serrat (2010: 2-5), are simultaneously misunderstood, sometimes over promoted, and accordingly misused.

Firstly, conflicting definitions of performance indicators abound. In their shortest yet most stringent expression, they are a numerical measure of the degree to which an objective is being achieved. Others consider them an observable change or event that provides evidence that something has happened, be that an output delivered, an immediate effect occurred, or a long-term process observed. To such discerning interpreters, indicators do not offer proof so much as reliable clues that the change or event being claimed has actually happened or is happening: rather, evidence from several indicators will make a convincing case for claims being made.

Secondly, according to Serrat (2010: 2), complex issues of cause-and-effect are seldom considered. Obviously, performance indicators can only pertain to matters that an agency controls. However, agencies never command much and usually settle for subprime indicators that afford enough control for their purposes. This reality is intrinsic to all human endeavours, especially those that touch political decision-making or aim to spark social change. Consequently, interest has grown in approaches to planning, monitoring, and evaluation of outcomes and their metrics that consider actor-centred development and behavioural change, continuous learning and flexibility, participation and accountability, as well as non-linearity and contribution.

Thirdly, the dimensions of performance mentioned earlier namely, relevance, efficiency, effectiveness, sustainability, and impact illustrates that there can be no single assessment of accomplishments overall. Performance is an amalgam of dimensions, some of which may conflict. Measuring it calls for an appropriate benchmarks, developed with full knowledge of their interrelationships.

Fourthly, performance measurement must have a purpose as it can never be an end in itself. According Serrat (2010: 3), the reasons for engaging in it is to evaluate, control, budget, motivate, promote, celebrate, learn, and improve (Table 2.18). Manifestly, no single metric is appropriate for all eight objectives. Serrat (2010: 3-4) argues that practitioners must consider the managerial purpose to which performance measurement might contribute these, alas, being ordinarily to control and budget, and how they might best deploy an informative blend of measures anchored in context. Only then will they be able to select valid yardsticks with the characteristics necessary to help meet each purpose, directly and indirectly, concentrating on what matters most.

Fifthly, many other things besides performance indicators are needed to improve achievements. The other pre-requisites include the board, management and employees who are focused on meeting the explicit and latent needs of the client, audiences, leadership and commitment to developing and extending products and services; and a culture of openness in which personnel are encouraged and willing to question why they do what they do.

Table 2.18: Eight reasons to measure performance (Behn, 2003 as cited by Serrat, 2010: 3)

Purpose	The Question that Measuring Performance can Help Answer
Evaluate	How well is the organisation performing?
Control	How to ensure that the subordinates are doing the right thing?
Budget	On what programs, people, projects, or programs should the organisation spend the public's money?
Motivate	How to motivate line staff, middle managers, non-profit and for-profit collaborators, stakeholders, and citizens to do the things necessary to improve performance?
Promote	How to convince political superiors, legislators, stakeholders, journalists, and citizens that the organisation is doing a good job?
Celebrate	What accomplishments are worthy of the important organisational ritual of celebrating success?
Learn	Why is what working or not working?
Improve	What exactly should who do differently to improve performance?

Organisations, according to Kerzner (2009: 330), measure the performance of their PMs in least two areas:

- Business results as measured by profits, contribution margin, return on investment, new business, and income; also retaining clients, on-time delivery, meeting contractual requirements and obligations, and within-budget performance, and
- Managerial performance as measured by overall project management effectiveness, organisation, direction and leadership, and team performance.

In addition, Kerzner (2009: 331) argues that when a PM is assessed, it should also consider the conditions under which it was achieved; the degree of task difficulty, complexity, size, changes, organisational support and general business conditions.

2.8.2 EVALUATING PROJECTS

Evaluation, in the context of this study to alleviate confusion between terminologies, is the process of assessing the impact of an organisation, a project, a programme or a policy while it is in operation or after it has ended. It considers the economy, effectiveness and efficiency of the project to determine whether the original objectives have been met as initially identified and logged in the project plan or business case.

Project evaluation is generally referred to the collective or a set of organisational activities with a specific time schedule and budget to put projects into action to create conditions to achieve the desired political or organisational goals. It is a systematic and analytical assessment addressing important aspects of a programme and its value, and seeking reliability and usability of findings. Evaluation brings to the fore the lessons to be learnt for the future which in turn should be fed into future decision-making. Evaluation does not seek to create blame for what did not go well.

2.8.2.1 Evaluation Types

There are various different kinds of project evaluations that can be classified by either purpose or method, but since form follows function, the basic typology is based on the evaluation's purpose. Ausland (2010: 2) lists the main types of evaluations:

- Needs assessment. Evaluations that review a potential site or community to assess the needs that justify a project design. These often utilise third party data and community / client interaction to define the situation and build a case for directing a specific intervention toward a target population; design analysis. Evaluations that assess the logic of the project design. They assess if there is a complete, coherent, causal chain from the project inputs and activities to the project objectives as well as the validity of the assumptions made in the chain's links;
- Process evaluation. Evaluations that determine if the project was implemented as planned. Was the money spent as budgeted, were the services delivered as designed, did the benefits reach the right people, was the project participatory and culturally sustainable, and did anything unexpected happen?
- Impact evaluation. Evaluations that determines at whether or not the project produced the desired effects. The project happened and lives were changed – impact evaluation asks if these changes can be causally attributed to the project, and

- Cost-benefit analysis. Efficiency evaluations that compare different interventions and determine what each costs to produce an equivalent impact.

2.8.2.2 Objectives of evaluations

Returns on Government investment in projects are normally difficult to quantify. The main objectives of evaluations are to improve accountability, decision-making, and resource allocation by informing key decision-making processes and encouraging on-going organisational learning and change. It provides insight and well-justified views on the project or program. Evaluation enables decisions to be taken on a more informed basis and is one of the links in the feedback loop of which the output results in an improvement or replacement of methods, and procedures. Evaluation adds value by focusing on what is really working, what needs to be improved, and finding ways to achieve project or programme objectives more cost effectively and efficiently.

Evaluation, according to Mowatt (2005: 2), takes an objective look at what has been done and identifies the reasons for both success and failure, and how future work can learn from both. It is normally carried out at the end of the project. However, an evaluation can be carried out either at a specified time, or as is the case with a multi-phased project, at the end of a phase. Equally, evaluation is a means by which those administering the project are held accountable to stakeholders. Common practice dictates that people external to the project with specialist skills carry out the evaluation. However, the current trend is towards a more participatory approach involving a broad cross-section of those involved in the project with or without external consultants taking part. The importance of evaluation is that it can be used as a tool for in-depth study of performance and effectiveness. However, the benefits of evaluation must outweigh the cost for doing it.

2.8.2.3 What is the purpose of project evaluation?

Evaluations are systemic, analytical assessments reviewing important or crucial aspects of a project and its value while seeking reliability and usability of findings. It can be seen as a monitoring tool for identifying failures and successes of project and to devise improvement measures. It is about checking whether the project is on the right track and creating a dialog platform for questioning what must be achieved.

Evaluations always serve a broader purpose, which is to make a particular contribution to an area of public policy and its programmes. The most commonly recognised purposes of evaluation, according to the European Commission (2008: 1), are:

- Planning and efficiency - ensuring that there is a justification for a policy / programme and that resources are efficiently deployed;
- Accountability - demonstrating how far a project or programme has achieved its objectives, how well it has used its resources and what has been its impact;
- Implementation - improving the performance of programmes and the effectiveness of how they are delivered and managed by linking learning outcomes to objectives and providing a form of quality control, and
- Institutional strengthening - improving and developing capacity among programme participants and their networks and institutions by determining relationships between learning, training and transfer to the job.

Constructive project evaluations will also create peer pressure amongst individual PMs, project teams and even regional offices of a particular organisation such as the NDPW to improve performance. The answer to the question: 'What is the purpose of evaluation?' would appear to be relatively straightforward. Most of the evaluation literature, manuals and guidelines describe the purpose of evaluation as being to review the effectiveness and efficiency of an organisation, or a project team, a PM, or a project, in meeting its planned objectives. According to this definition, evaluation is intended to act as a catalyst for organisational change and improvement, by providing managers with useful information, intelligent analysis and feasible recommendations.

However, Crisp (2002: 1) maintains that evaluations have the potential to make an important contribution to the process of organisational change, but should not however overestimate that contribution. Crisp also adds that evaluations alone rarely lead to major change. Nevertheless, when they are combined with recognition of the need for change by senior management, and when they are supported by an organisation's key stakeholders, evaluations can have a significant impact on the way that an organisation goes about its business.

The Scottish Government (2010: 34) adds more purposes of project evaluation:

- Assess whether the project is progressing according to plan and identify corrective actions;

- Identify opportunities for improving current performance;
- Identify actions to consolidate current project implementation methods;
- Facilitates value for money engineering;
- Document the lessons to be drawn for others and for the future, and
- Take stock for the future and identify next steps.

While organisational change is clearly a primary objective of the evaluation function, there are seven other and equally important purposes of evaluation as described by Crisp (2002: 1-4):

- Reinforcing accountability. The issue of corporate and individual accountability has been a prominent feature in all organisations over the years. One of the principal purposes of the evaluation function is to reinforce the accountability of the organisation to its key stakeholders. Stakeholders in this instance refer to the organisation's staff, clients, service providers such as consultants and contractors, and beneficiary communities. Introducing a comprehensive evaluation programme will afford all of the aforementioned stakeholders the opportunity to voice their opinions and assess the organisation's activities;
- Facilitating institutional and individual learning. In every organisation, there is a need to learn from their mistakes. At the same time, the evaluation function has a responsibility to identify examples of good practice and to draw attention to successful initiatives that might be replicated elsewhere. In this respect, there is considerable scope for evaluation findings to be used, as a basis for improving internal processes, revising policies to ensure full policy integration, improve client relations and identify training needs. Evaluation findings should then be incorporated systematically into the organisation's learning programmes and processes;
- Team building. Evaluation has the potential to bring people together. Rather than provoking disunity, evaluation can be used to facilitate the task of team building. For example, when quarterly evaluation reviews of the projects are completed in that period with all the PMs and management, it will facilitate not only learning from one another and sharing expertise, but also provide a platform to reach consensus on how things need to be done. People will then take ownership of the process that will make it even more successful. A project or programme evaluation steering committee could also be established that consists of staff members from all divisions within the organisation. This will not only help them understand the complexities and process involved in the project delivery, but also the impact of their involvement in the service delivery process;
- Strengthening partnerships. Crisp (2002: 3) believes that evaluation has an important role to play in strengthening partnerships between the organisation and its clients as well as the

service providers such as consultants and contractors. Joint project evaluation will entice them to review their work in a more collective and comprehensive manner. Although this might be very ambitious, it must be seen as a step in the right direction;

- Promoting understanding. The purpose of evaluation must not be seen as simply implementing recommendations emanating from the process. It must be seen as a tool that could facilitate organisational and individual understanding of the operational environment in which the organisation has to work. An understanding of the strengths and weaknesses of the organisation's own activities, and an understanding of the interests and behaviour of the other external stakeholders with whom the organisation is obliged to work with. Evaluation could be seen another form of intelligence. Crisp argues that if conducted and disseminated effectively, it should assist managers and staff members to make intelligent decisions about the projects, programmes, processes and policies for which they are responsible;
- Supporting advocacy efforts. Crisp (2002: 3) also maintains that evaluation and advocacy are not usually regarded as related activities. While evaluation is thought to be about impartial and dispassionate analysis, advocacy is perceived as the partisan promotion of particular causes and interests. Crisp reasons that this traditional view is based on a misunderstanding of both functions and that it is entirely legitimate for evaluations to be used as a means of drawing attention to particular issues or situations. PMs and management have a responsibility to base their promotional efforts on accurate information and coherent analysis. Evaluations, according to Crisp (2002: 3), provide exactly the kind of information and analysis that PMs and management could and indeed should be using, and
- Influencing organisational culture - Crisp (2002: 4) concludes by suggesting that a primary purpose of the evaluation function is to influence the organisational culture. Evaluation, Crisp suggests, embodies a number of principles that are of considerable organisational value. If it is undertaken in the right way, evaluation encourages staff members to assess the impact of their work. It encourages them to strive for improved performance. Crisp also states that it promotes an inquisitive, self-critical and transparent approach to their work. It contributes to the development of organisation's institutional memory. Moreover, it can be used to operationalize total transparency of the daily operations of an organisation facilitated by the right that stakeholders have to be consulted about decisions that affect their work and daily lives.

2.8.2.4 Benefits of undertaking evaluation

If properly planned and resourced, evaluation can produce significant benefits to an organisation. The United Kingdom (UK) (2002: 9) and the Scottish Government (2010: 18) argue that evaluation will help to:

- Improve the design, organisation, implementation and strategic management of projects;
- Ascertain whether the project is running smoothly to initiate corrective action can be taken if necessary;
- Promote organisational learning to improve current and future performance;
- Avoid repeating costly mistakes;
- Improve decision-making and resource allocation e.g. by adopting more effective project management arrangements;
- Improve accountability by demonstrating to internal and external parties that resources have been used effectively and efficiently, and
- Demonstrate acceptable outcomes and or management action thus making it easier to obtain extra resources to render more projects.

Further benefits of undertaking project evaluation, according to the Government of Western Australia (2009: 16) include:

- It facilitates better Government decision-making by presenting a balance between strategic, financial, economic and social issues;
- It encourages consideration of all risks that may have an impact on the project;
- It provides a decision-making framework within which access is gained to strategic asset management issues;
- It facilitates comparisons between projects with a diversity of outcomes by providing a consistent presentation framework, and
- It ensures proper examination of all available options.

The Hong Kong Government (2009: 8) argues that governments have a responsibility to make the best use of public resources to deliver services to the community, and to demonstrate accountability by evaluating projects to:

- Identify measures to improve the project being reviewed;
- Assess the contribution of the project to the department's business objectives;
- Provide an effective means to demonstrate accountability;
- Evaluate whether the intended project outcomes have been achieved;

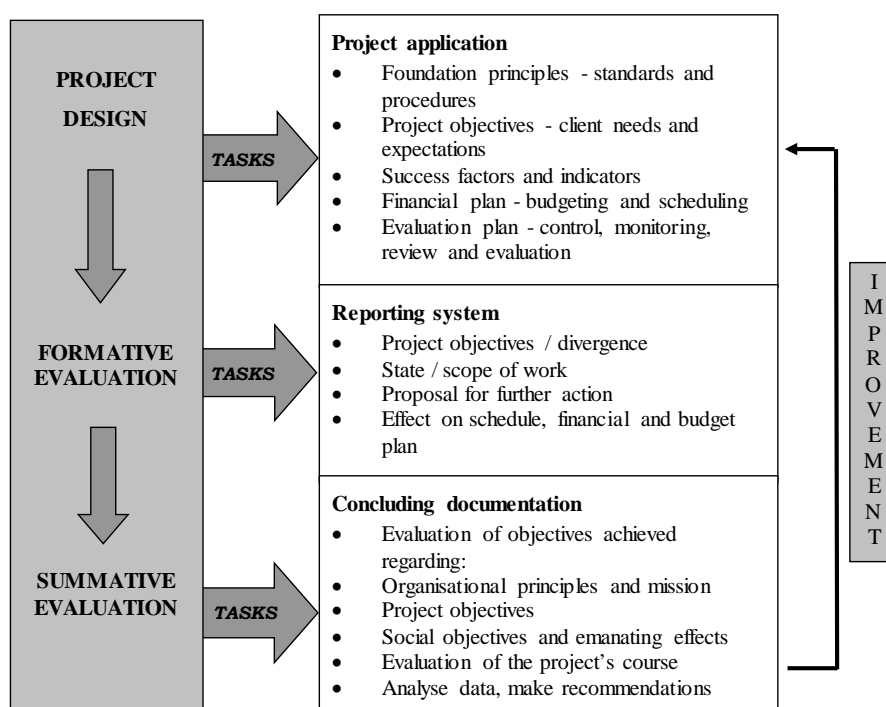
- Improve benefits realisation and project implementation, and
- Improve the delivery and outputs of future projects by learning from the past.

The Scottish Government (2010: 18) argues that project evaluation should be given high priority and not be viewed as an overhead or a mechanism for allocating blame.

2.8.2.5 Formative and Summative evaluation

Flood (2000: 142), the Scottish Government (2010: 14) and Szekely (2010: 5) distinguish between the interlinked formative and summative evaluations that are shown in Figure 2.27 to illustrate the type of issues that need to be addressed at the different stages of the project life cycle.

Figure 2.27: An overview of the overall evaluation process (Adapted from the Scottish Government, 2010: 14)



Formative evaluations are usually undertaken prior to, or during the implementation of a project to gain further insight into decision-making, problem solving and strategic planning. It focuses on process issues such as decision-making surrounding the planning of the project, the managing of the procurement process, how the project was implemented and progress towards achieving the project objectives. The purpose is to support and improve the management, implementation and development of the project by addressing operational questions, monitoring

events and extent of impacts. Summative evaluation focuses on the outcome of the project. It could be carried out during the implementation phase of the project and builds on the work done during the formative stage. It focuses on issues such as the extent to which the project has achieved its objectives; costs comparison; benefits, risks compared against the estimates of the original plan; the impact of the project on the end users and lessons learned from developing and implementing the project. Summative evaluations are carried out when the project has been running for some time or have been completed, to study its effectiveness and judge its overall value. It is also used to assess how well certain individuals or groups measure up to some specified standard. These evaluations are generally used to assist in allocating resources and enhancing decision-making and public accountability that is incorporated into improvement strategies. Questions of outcome and overall relevance of the project are to be addressed and reflected upon and findings are transferred into future improved strategies.

2.8.2.6 Different approaches to project evaluation

Evaluation, according to the Scottish Government (2010: 13), involves consideration of the economy, efficiency and effectiveness of the project to determine whether the original objectives have been achieved. Shapiro's (2007: 11) different approaches to project evaluation are summarised in Table 2.19.

Table 2.19: Different approaches to evaluation (Shapiro, 2007: 11)

Approach	Major purpose	Typical focus questions	Likely methodology
Goal-based	Assessing achievement of goals and objectives.	Were the goals achieved? Efficiently? Were they the right goals?	Comparing baseline and progress data; finding ways to measure indicators.
Decision-making	Providing information.	Is the project effective? Should it continue? How might it be modified?	Assessing range of options related to the project context, inputs, process, and product. Establishing some kind of decision-making consensus.

Table 2.19 - Part 2

Goal-free	Assessing the full range of project effects, intended and unintended.	What are all the outcomes? What value do they have?	Independent determination of needs and standards to judge project worth. Qualitative and quantitative techniques to uncover any possible results.
Expert judgement	Use of expertise.	How does an outside professional rate this project?	Critical review based on experience, informal surveying, and subjective insights.

The best evaluators, according to Shapiro (2007: 11), use a combination of all these approaches, and that an organisation can ask for a particular emphasis, but should not exclude findings that make use of a different approach.

2.8.2.7 Prerequisites for successful evaluation

According to the UK (2002: 9), and the Scottish Government (2010: 20), there are a number of prerequisites to ensure maximum pay-off from evaluation and it is important to:

- View the evaluation as an integral part of the projects and plan for at the outset. The evaluation should be costed and resourced as part of the projects;
- Secure commitment from senior managers within the organisation. PMs and line managers will be expected to take full responsibility for the management of all stages;
- Involve all key stakeholders in its planning and execution. Establishing of a Project Evaluation committee for a large organisation such as the NDPW, could be beneficial to oversee the design and implementation processes;
- Develop relevant criteria and indicators to assess project and programme outcomes from the outset of the project;
- Put in place mechanisms to enable monitoring and measurement of progress, and
- Foster a learning environment to ensure lessons are heeded.

However, the potential value of an evaluation will only be realised when action is taken on the findings and recommendations emanating from it. Processes are needed to ensure that this happens. Using the same set of performance indicators during the entire project life cycle, according to Rad and Levin (2002: 11), will provide a baseline for informed monitoring of the

progress of the project in achieving all of its objectives. They also maintain that this consistent and methodical collection of data will be invaluable in tracking the effectiveness of various project implementation processes during the project phases. The resulting historical data, according to Rad and Levin (2002: 11), will provide a foundation for continuous improvement in planning future projects, project programming, reviewing internal processes and policies. Effective measurement processes can help organisations succeed by enabling them to understand their capabilities and develop plans that can be met by the project teams to plan and deliver projects masterly. They also state trends are detected through metrics, and can anticipate problems, thus providing better control of costs, reduction of risks of not completing projects within the perimeters or even not completing it at all, improvements in quality and a greater assurance that the organisational mission and objectives will be met. Evaluation must thus be a continuous process by monitoring and accessing achievements, knowing what the expected or unexpected changes are, become aware of changes as they arise, understand these changes, and the finally take action in response to the changes.

The purpose of M&E according to Woodhill (2000: 5), is thus for ensuring planned results are achieved, motivating and generating shared understanding amongst stakeholders, generating new knowledge and support learning, building the capacity of those involved in the project, ensuring accountability and fostering public and political support.

2.8.2.8 Who should undertake the evaluations?

The general perception is that the co-ordinator of the evaluation process must be someone who has a deep understanding and experience in doing evaluations, whether the person is an internal i.e. supervisors or managers, or external evaluator. Literature reviews revealed that external evaluators tend to be more objective than internal evaluators, provided that they are ethical, while internal evaluators could be bias and manipulate outcomes. Evaluators have a bad reputation in many organisations that is often justified. For in too many cases, evaluation is perceived to be concerned primarily with criticism. It focuses on what went wrong and on what failed to work instead of what is being done right and what must be improved. The bad reputation can also be attributed to evaluators revealing personal attributes of a PM, which is supposed to be confidential. In some organisations a very clear distinction is made between the people who do evaluations and the people whose work is evaluated. Not surprisingly, the latter have a tendency to resent the work of the former. In this respect, evaluation can act as a divisive force.

Evaluation is the most effective when it starts at the beginning of the project and the methods and framework should be easy to use, short and visually interesting. For best results, the Scottish Government (2010: 35) suggests that all key stakeholders should be involved in the evaluation planning and execution for the process to be successful. The stakeholders include the PMs, project teams, representatives of the parent organisation and the client, the contractor and anybody else who has an interest in the performance of the project. It should be a team effort and controlled preferably by an operational manager from the operational division or one of the members of the PMO / PSO due to its subjectivity.

2.8.2.9 The major obstacles in doing evaluations.

Numerous obstacles could be present when doing evaluations. However, according to Van der Walt and Knipe (1998: 85), the three main obstacles that may occur in the evaluation process are: setting standards, the application or interpretation of standards, and taking appropriate action when required. Standards must be formulated in advance and be tested for compliance. Deciding on appropriate action requires insight from the PMs, the project teams and top management. Helgason (1999: 9) acknowledges that making use of the findings of evaluations is difficult as the history of evaluation may be characterised as one of unfulfilled promises that raises doubts about its overall usefulness. It may be seen as a management fad, being too theoretical, or people may feel threatened by it as it will zoom in on their actual performance based on facts in most instances although some of it might be subjective.

It thus an absolute necessity to gain support from top management and the policy-makers to make effective use of recommendations emanating from evaluations. There is a definite need for evaluation programmes within organisations to improve internal processes, policies, and facilitate policy integration. If people are given the assurance and see the value actioned from the evaluations, it will generate 'ownership' by all the stakeholders. Without taking 'ownership' of the evaluation process the evaluations will have little effect resulting in fruitless expenditure.

Most project evaluations are done for determining accountability and learning according to Ausland (2010: 3):

- Accountability - Most organisations also evaluate their projects because they have to. Donors and Boards generally require at least some of their projects to be evaluated. They want to see evidence that previous projects were good before they will agree to fund or

support more of them. Accountability ties consequences to performance; bad projects get killed, good projects repeated or expanded, and

- Learning - Organisations may want to know if an innovative project design or new intervention is effective. Perhaps they want to know if something that had worked well in one context also works well given new conditions in a different context. It could even be that they want to know if a new less-costly way to implement a project is as effective as the old expensive way. Lessons can only be learnt with confidence if project's impact is evaluated carefully.

However, Ausland (2010: 4-5) argues that most project evaluations fail to provide either learning or accountability because of the following reasons:

- They do not inform decisions - Evaluation is an empty exercise if it cannot trigger change. In theory, they are backward looking, but forward informing. Nevertheless, the same stakeholders who demand project evaluations often refuse to be guided by the results. What leaders believe about a project can easily override what an evaluation report says about it, and the evaluator's recommendations must compete with organisational constraints, personal loyalties, political considerations, and economic incentives that have at least as much sway in determining what happens next.

As a result many evaluation reports fail to influence decisions they were designed to inform. Evaluation reports are filed away quickly with little real reflection on their implications. There may be some perfunctory discussion and finger wagging around negative findings, but this is largely just a charade – everyone pretends the evaluation mattered a great deal when in fact it matter not at all.

The root problem, according to Ausland (2010: 4), is that few stakeholders really believe the evaluation reports they get. The evidence in most reports is just not that compelling and often the findings are little more than opinions, and the professional recommendations more personal suggestions. If the PM is well liked and trusted, the evaluator's take simply counts for less. The reports may be used to bolster a position already taken, but they will rarely sway someone from their position. They are just too easy to disregard when they do not say what the evaluator wants them to say. The truth is few evaluation reports have evidence too compelling to dismiss. If this is the case, then maybe it is quite possible that few evaluations actually inform decisions.

- Evaluations are not assimilated - Many development organisations simply do not have the capacity to absorb the ‘lessons learned’, which ends up being a misnomer then anyway since they are not really learned. Assimilation becomes particularly problematic in organisations with policies that require all projects to be evaluated. For two reasons: First, compliance replaces learning as the organisation’s *de facto* evaluation objective. Organisations end up focusing more on ensuring the standards were adhered to, the templates used, and the deadlines hit then on figuring out how to achieve better development results.

Second, the diminishing returns on evaluation information approach zero as the number of evaluated projects increases. Consider what a comprehensive evaluation policy implies for large organisations, which can produce up to 1 000 evaluation reports a year. Ausland (2010: 4) argues that organisations cannot handle that quantity of information in a meaningful way? It is similar to drinking water from a fire hose – most of it just sprays in many directions, but in. The marginal value of the nine-hundredth evaluation report pales to its cost. However, somewhere in all those reports are some really important evaluation findings that the organisation should take to heart. However, hearing those findings above the noise of all the others is nearly impossible, and so the organisation fails to learn its own lessons learned.

- Evaluations do not always answer the critical questions - The critical question of an evaluation is whether the project achieved its outcome objectives? It can be assumed that most development projects have a genuine intention to improve the lives of the beneficiaries or that of the singular client and end users; the problem is that there is a gap between the intention and the result. In order to narrow this gap, according to Ausland (2010: 5), there must be a reliable measurement of the project’s impact. The problem is that most evaluations utilise methods that are too weak to produce a reliable measurement.

The most commonly used technique for estimating the impact of a project is to take measurements of the key indicators before the project was implemented and compare them to measurements of the same indicators afterwards. This pre and post technique may initially be a good idea, but it is profoundly flawed. There are countless variables external to the project design that influence the results the project is trying to achieve. The effects of these other variables obscure the impact of the project, which could mistakenly conclude that a good project is bad, and a bad project good. Ausland (2010: 5) concurs that a project can have a positive impact despite negative results and *vice versa*, but asks what kind of

accountability is there in this equivocating stance? The organisation can take credit for contributing to positive results while sidestepping responsibility where negative results occur.

Helgason (1999: 7) states that governments must support an evaluation culture that encourages innovation and adaptation to a changing environment. The basic message is that to stay relevant and survive in the future, organisations need continue learning from feedback of results. Ignore the feedback and the organisation will surely die.

Kerzner (2009: 372) maintains that lessons can be learnt from each project, whether it was pronounced to be a success or a failure. He also states that employees are reluctant to sign documents where lessons learnt reveals mistakes made on projects and organisations cannot document lessons learnt. PMs then only learn from their own mistakes and not from mistakes others have made, thereby repeating costly mistakes and impeding the organisation from becoming a project-competent organisation.

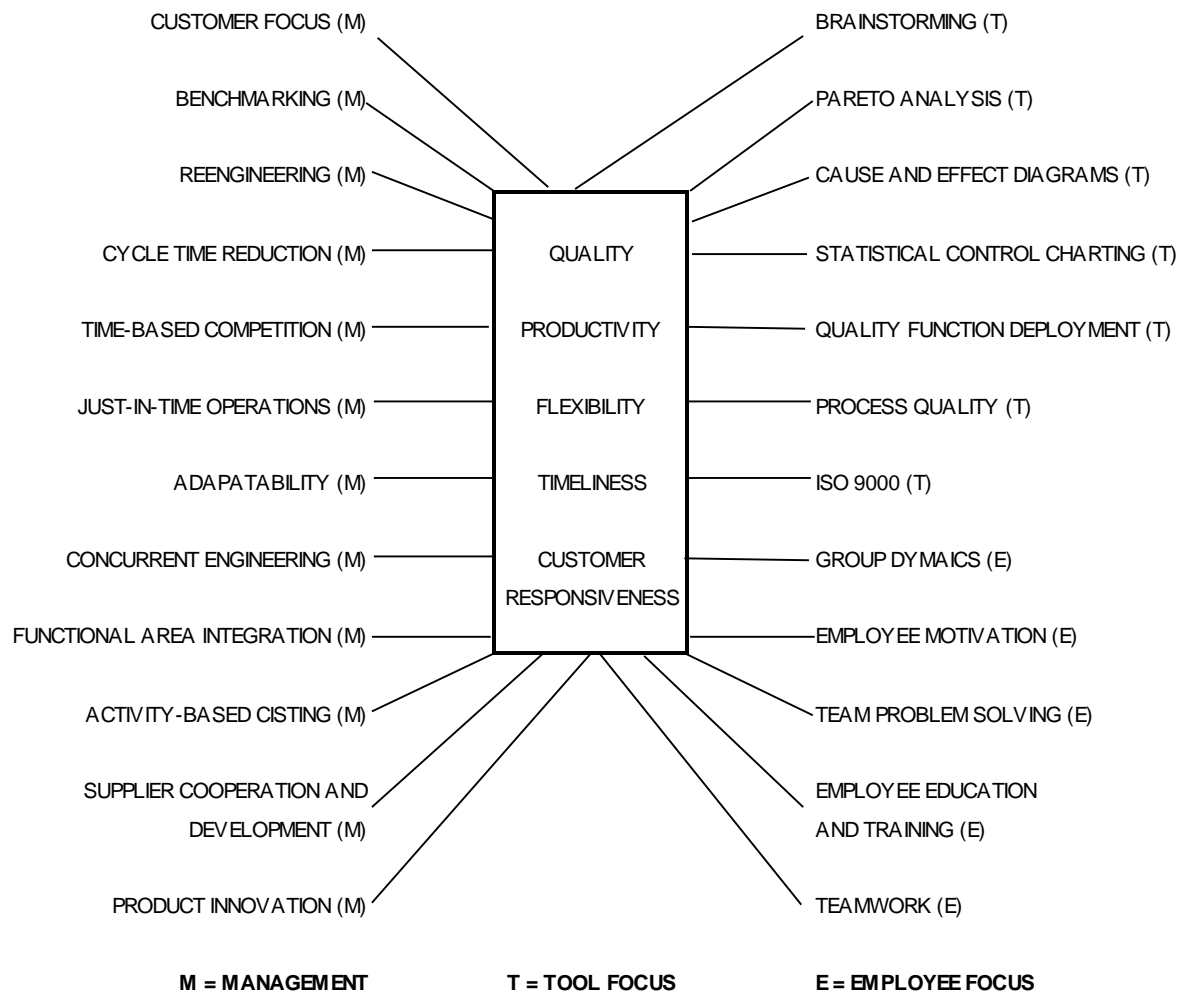
2.8.3 QUALITY MANAGEMENT

According to Kerzner (2009: 920), there is no explicit definition of TQM. Some define it as meeting the client's needs and expectations, other as delivering quality products or services at the right place at the right time.

For the organisation it could be less variability in quality of the product or service and less waste. Every organisation should have a TQM strategy that is normally long term based. Figure 2.30 illustrates the basic objectives and focus areas of TQM.

Kerzner (2009: 920-921) identifies seven primary strategies for TQM: solicit ideas for improvement from employees; encourage and develop teams to identify and solve problems; encourage team development for performing operations and service activities resulting in participative leadership; benchmark every major activity in the organisation to ensure that it is done in the most efficient and effective way; utilise process management techniques to improve client service and reduce cycle time; develop and train client staff to be entrepreneurial and innovative in order to find ways to improve client service, and implement improvements so that the organisation can qualify as an ISO 9000 supplier or service provider.

Figure 2.28: TQM objectives and focus areas (Boyd and Fraser, 1995 cited by Kerzner, 2009: 920)



Kerzner (2009: 920-921) adds ten secondary strategies for TQM Figure 2.28):

- Maintain continuous contact with clients; understand and anticipate their needs;
- Develop loyal clients by not only pleasing them, but also by exceeding their expectations;
- Work closely with suppliers or service providers both contractors and consultants to improve their product or service quality and productivity;
- Utilise information and communication technology to improve client service;
- Develop the organisation into manageable and focused units in order to improve performance;
- Utilise concurrent or simultaneous engineering;
- Encourage, support, and develop employee training and education programs;
- Improve timeliness of all operation cycles i.e. minimise all cycle times;
- Focus on quality, productivity, and profitability, and
- Focus on quality, timeliness, and flexibility.

Juran (1954 cited by Kerzner, 2009: 880) states that the contractor's view of quality is 'conformance to specification', whereas the client's view of quality is 'fitness for use when delivered and value' in terms of the quality of design, quality of conformance to specifications and tolerances, reliability i.e., frequency of repairs, and maintainability i.e. speed or ease of repair, the potential hazards of product use i.e. safety, and the ease of product use. There are however, also legal implications of quality if not abided, which could include criminal and / or civil liability, appropriate corporate actions and warranties to be honoured.

Kerzner (2009: 924) also highlights the fact that more and more emphasis is being placed on strategic quality management, which include; quality as defined by the client, quality as a competitive weapon, quality is now an integral part of the strategic planning process and quality requires an organisation-wide commitment.

2.8.4 LEARNING ORGANISATIONS

According to Senge (1990: 3), learning organisations (LOs) are "organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together." The basic rationale for such organisations is that in situations of rapid change only those that are flexible, adaptive and productive will excel. For this to happen, it is argued, organisations need to discover how to secure people's commitment and capacity to learn at all levels. According to Senge (1990: 14), adaptive learning must be supported generative learning, learning that engenders people's capacity to create. The dimension that distinguishes learning from more traditional organisations is the mastery of certain basic disciplines. The five disciplines that Peter Senge identified are said to be converging to innovate learning organisations, include: system thinking, personal mastery, mental models, building shared vision and team learning.

Skyrme (2011: 2) states that learning organisations is seen as a response to an increasingly unpredictable and dynamic business environment. Skyrme (2011: 3) defines a learning organisation as: "An organisation that has in place the culture, systems, mechanisms and processes that are used to continually engender the capabilities of those who work with or for it, and collectively engender the organisation's knowledge so that it can achieve sustainable outcomes - for them and the communities in which they participate."

The important points notable from this definition according to Skryme (2011: 3), are that learning organisations:

- Are adaptive to their external environment;
- Continually engender their capability to change / adapt;
- Develop collective as well as individual learning, and
- Use the results of learning to achieve better results, i.e. a sustainable future.

Skryme (2011: 3) identifies four characteristics that are prevalent in a learning organisation:

- A learning culture - an organisational climate that nurtures learning, allowing quiet time for reflection on tasks performed, encouraging participation in forums to share experiences and giving people incentives to share and develop their knowledge with others. There is a strong similarity with those characteristics associated with innovation;
- Networking and self-organising structures - much learning takes place outside of the formal organisation; staff participate in communities of practice; they self-organise into groups to engender their personal and organisational knowledge;
- Processes - processes that encourage interaction across departmental boundaries. These are infrastructure, development and management processes, as opposed to business operational processes;
- Tools and techniques - methods that aid individual and group learning, such as creativity and problem solving techniques, and
- Skills and motivation - to learn and adapt; not to be satisfied with the status quo.

Skryme (2011: 3-5) further elaborates on the first three factors:

A learning culture:

- Future, external orientation these organisations develop understanding of their environment; senior teams take time out to think about the future. Widespread use of external sources and advisors e.g. clients on planning teams;
- Free exchange and flow of information - systems are in place to ensure that expertise is available where it is needed; individuals network extensively, crossing organisational boundaries to develop their knowledge and expertise;
- Commitment to learning, personal development - support from top management, people at all levels encouraged learning regularly; learning is rewarded. Time to think and learn , understand, explore, reflect, and develop;

- Valuing people - ideas, creativity and imaginative capabilities are stimulated, made use of and developed. Diversity is recognised as strength. Views can be challenged;
- Climate of openness and trust - individuals are encouraged to develop ideas, to speak out, to challenge actions, and
- Learning from experience - learning from mistakes is often more powerful than learning from success. Failure is tolerated, provided lessons are learnt.

Key management processes:

- Strategic and scenario planning - approaches to planning that go beyond the numbers, encourage challenging assumptions, thinking 'outside of the box'. They also allocate a proportion of resources for experimentation;
- Competitor analysis - as part of a process of continuous monitoring and analysis of all key factors in the external environment, including technology and political factors. A coherent competitor analysis process that gathers information from multiple sources, sifts, analyses, refines, adds value and redistributes is evidence that the appropriate mechanisms are in place;
- Information and knowledge management - using techniques to identify, audit, value, cost versus benefit, develop and exploit information and knowledge as key corporate resources; extensive use of collaborative technologies and associated processes;
- Capability planning - profiling both qualitatively and quantitatively the competencies that the organisation needs for the future. Profiling these on a matrix can be helpful to planning changes in the workforce and emergent skill requirements;
- Team and organisation development - the use of facilitators to help groups with work, job and organisation design and team development - reinforcing values, developing vision, cohesiveness and a climate of stretching goals, sharing and support;
- Performance measurement - finding appropriate measures and indicators of performance; ones that provide a 'balanced scorecard' and encourage investment in learning, and
- Reward and recognition systems - processes and systems that recognise acquisition of new skills, team-work as well as individual effort, celebrate successes and accomplishments, and encourages continuous personal development.

Tools and techniques:

There are numerous learning, creativity and knowledge-sharing tools and techniques that can be used to underpin day-to-day activities. Here are just a few, organised into the following categories:

- Inquiry - interviewing and knowledge elicitation techniques, information searching;

- Creativity - brainstorming, associating ideas;
- Making sense of situations - systems thinking, organising information and thoughts, simulation, modelling;
- Making choices - decision trees, options analysis;
- Observing outcomes - recording, observation, and
- Reframing knowledge - embedding new knowledge into mental models, memorising.

Skryme (2011: 3) argues that providing the systems and processes for the management of knowledge and flow of information is a crucial and underrated aspect of the learning organisation.

Interest in adopting the principles of a learning organisation, according to Skyrme (2011: 3), stems from the recognition that attention to people, their knowledge and their capacity to learn and develop, is a core competence and a competitive advantage. Organisations that have adopted LO principles report various benefits, such as:

- Solving what appears to be intractable problems, for example with product quality or client service;
- Coping with rapid change or unexpected events where existing 'programmed' responses are inadequate;
- Provide flexibility to cope with a changing economic and competitive environment;
- Developing innovative products and services that give a competitive edge in the marketplace;
- Having a deeper understanding of client needs - both explicit and implied - and as a result developing novel solutions, and
- Allow front-line staff to respond with initiative based on client needs versus being constrained by business processes established for different circumstances.

Kerzner (2001: 466) states that it is often said that more can be learned from failure than from success. The main lessons that can be learned from project failure are: do not skimp on the PM's qualifications or opportunities to gain more experience; do not spare time and effort in laying out the project groundwork and defining work; establish and use network-planning techniques, having the network as the focal point of project implementation; be sure that the information flow related to the project management system is realistic; be prepared to re-plan jobs continually to accommodate frequent changes on dynamic programs; whenever possible, tie together responsibility, performance and rewards, and if mistakes in project implementation have been made, try again.

According to Kerka (1995: 3), one of the major barriers to the successful creation of generative learning is the lack of top management commitment, lack of effective leadership in project management, project teams and within the organisation. Kerka (1995: 3) suggests that the LO requires a fundamental rethinking of leadership and that managers must change the belief that only they can make decisions, and employees must change the belief that they do not have to think on the job as argued by Honold (1991). Leadership in a LO is the ability to coach and teach, it is not exclusive, authoritative, or assumed, but learned and earned. Other barriers according to Watkins and Marsick (1993 cited by Kerka, 1995: 3), include the inability to recognise and change existing mental models, learned helplessness, tunnel vision, no transfer of past learning, individualism and a culture of disrespect and fear. Inquiry and dialog may be threatening and people are often 'branded' for asking tough questions or identifying complex problems (Gratton, 1993).

Kerka (1995: 3) cites the following quotes; "The learning organisation is best thought of as a journey and not a destination (West, 1994) and a philosophy and not a programme (Soloman, 1994)." Kerka also maintains that learning in an organisation should be viewed as a sustainable resource, not a limited commodity (May, 1994) and that management should work on developing the mind-set of a culture of learning and change, and it must be recognised that visioning is an on-going process and not a once-off event (O'Neil, 1995).

Evaluation, according to the ILO (2008: 9), is an integral part of the monitoring and reporting that feeds the decision-making process and supports organisational learning. The project team, the partners involved in the project and the wider organisation benefit from a continuous learning process. A weak evaluation exercise is a lost opportunity for all to learn and for the organisation to use this knowledge to improve. Evaluation is thus instrumental in:

- Providing key stakeholders with the information needed to guide the project strategy towards achieving set goals and objectives;
- Providing early warning of activities and processes that need corrective action;
- Helping empower project partners by creating opportunities for them to reflect critically on the project's direction and decide on improvements;
- Building understanding, motivation and capacity amongst those involved in the project;
- Assessing progress to enable reporting requirements to be met; Assessing distribution of benefits among different beneficiaries, in particular among men and women, and

- The growing significance of project management as a management approach is rooted in the chaos of today's turbulent business environment, one of transformation, downsizing, outsourcing, continuous improvement processes and increased client focus. Project management lends itself to outsourcing and is excellent in a flattened organisational structure as it is based on assembling cross-functional and multidisciplinary teams. However, project management in itself does not give organisations competitive advantage, only competent and efficient individuals, teams and organisations with well-established learning culture do as illustrated in Figure 2.29.

The diagram illustrates the relationships between three levels of analysis: Team, Individual, and Organisation, and their corresponding learning processes. The nodes are arranged in a circular fashion, with arrows indicating the direction of influence or learning flow.

- Team** (left) has an arrow pointing to **Individual Learning** (top left).
- Individual** (center) has an arrow pointing to **Organisational Learning** (top right).
- Organisation** (right) has an arrow pointing to **Individual Learning** (bottom right).
- Individual Learning** (bottom right) has an arrow pointing to **Team Learning** (bottom left).
- Team Learning** (bottom left) has an arrow pointing to **Team** (left).
- Organisational Learning** (top right) has an arrow pointing to **Organisation** (right).
- Individual Learning** (top left) has an arrow pointing to **Individual** (center).
- Team Learning** (bottom left) has an arrow pointing to **Individual** (center).
- Individual Learning** (top left) has an arrow pointing to **Organisational Learning** (top right).
- Organisational Learning** (top right) has an arrow pointing to **Team Learning** (bottom left).

The project management competence of a PM is the capability to fulfil all functions specified in the role description. Besides the project management knowledge and experience for a given project type, a PM needs, to a certain degree, have knowledge about the product and the organisations involved in the project. In the South African context, cultural awareness and language knowledge have become prerequisites.

The competencies of a project team can be defined as the project management competencies of the project team members plus the social knowledge and experience of the team to commonly create the 'big project picture', to produce synergies, to solve conflicts, and to ensure learning in the team.

Not just individuals, but also organisations have the capability to acquire knowledge and experience and to store it in a 'collective mind' according to Senge (1994) and Weik and Roberts (1993). Willke (1998) describes organisational knowledge as hidden in organisational principles that define the way organisations work and projects are implemented and managed. Continuous learning and adapting for the better is prerequisite for future survival and warranting any organisation's existence.

The most common inhibitors to becoming a LO according to Skryme (2011: 8) are:

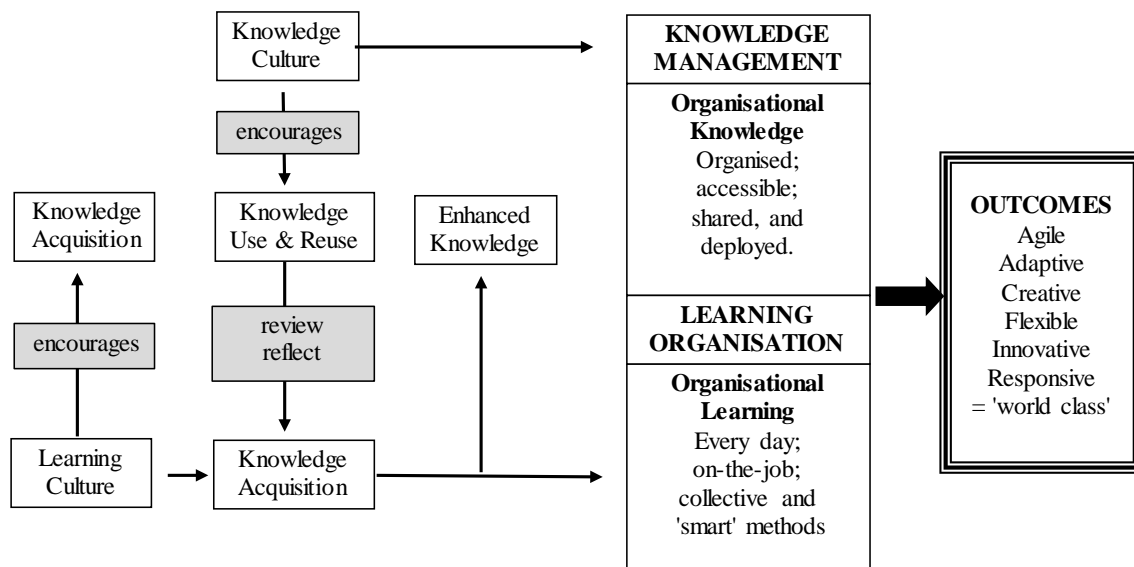
- Operational / fire fighting preoccupation - not creating time to sit back and think strategically;
- Too focused on systems and process e.g. ISO 9000 to exclusion of other factors such as bureaucratic versus thinking;
- Reluctance to train or invest in training, other than for obvious immediate needs;
- Too many hidden personal agendas, and
- Too top-down driven, over tight supervision result is lack of real empowerment.

Skryme (2011: 8) argues that knowledge management (KM) and the LO are inter-dependent as illustrated in Figure 2.30. For example, a disposition to learning encourages the acquisition and development both of personal and organisational knowledge, while KM provides the infrastructure and techniques to assimilate learning and engender the quality of organisational knowledge. Today, learning is a key feature in many KM practices, such as 'After action reviews' and sharing best practices. KM can also support learning activities, such as through the better classification, organisation and management of e-learning modules on a corporate portal.

Challenges and advantages of KM are naturally related to challenges and advantages of organisational learning. Unless project organisations are defined and measured based on a range of competencies needed for project success, the project management community will continue to struggle with properly addressing organisational aspects that affect project performance (Patil, 2005: 01). The roles and responsibilities of all stakeholders who influence the outcome of a

project is the foundation of an integrated and aligned project team and implementing organisation, without which projects often fail.

Figure 2.30: Knowledge management and learning organisation inter-dependents (Skryme, 2011: 8)



Project management competence, according to Skryme (2011: 8-9), flows from a synergistic relationship between people and the organisation. Development of competent PMs is integral to the broader development of organisational competence. Qualification standards within an organisation determine selection, training and mentoring needs of individuals. Continuous improvement, in turn, informs expectations for organisational performance and loops back to developing new organisational qualification standards. The result is synergy between the competence of individuals and that of the organisation in which they operate. Project evaluation can facilitate the latter and assist the PM in dealing with problems emanating from projects. Periodic review or monitoring, with or without the assistance of a supervisor or senior PMs, will safeguard PMs from the tendency of reoccurring problems.

It must be emphasised, a view that is supported by various authors is that there is no single right way to formulate and conduct evaluations. The choice of methods will depend on several factors, including the objectives of evaluation, the role of evaluation in a wider performance management framework including organisational and political considerations. The purpose of a comprehensive evaluation programme must not be seen as being the most appropriate input to policy-making and improving the performance management process, but rather as a very useful tool to obtain confirmatory data to consider in the aforementioned processes. It is also useful as

a tool to identify future development and training programmes as well as reviewing internal processes and policies.

Project evaluation outputs have three main uses: to ensure on-going formative development of innovations during the lifecycle of projects and project programmes; prepare business plans or applications for funding projects and other future orientated reporting, such as technical, functional and organisational specifications for further developments, and to inform programme learning and evaluation through formal annual reporting.

According to Bhatia and Drew (2006: 2), improving long-term performance is the goal of developing a performance culture. Just changing the processes or the operating system will not suffice. The organisation's culture must also change. Some of these changes will be wrenching that requires a performance-tracking system that breaks down top-level objectives into clear, measurable targets which employees at every level must understand, accept, and meet. When performance is not up to the standard, action is required.

Bhatia and Drew (2006: 2) argue that addressing problems quickly and holding colleagues accountable for poor performance raises efficiency as well as morale. To mitigate the top-down nature of target setting, managers must often make changes themselves. In so doing, they should have top management support that will enable them to address the long-standing complaints of the frontline staff, complaints that typically include management's lack of engagement, a greater desire for teamwork, and the need to address underperformance. Profound cultural changes generally follow and reinforce the transformation. The organisation's morale rises as participants build capabilities and see others developing as well. Only then will the new mind-set contribute to an increase in productivity and effectiveness.

2.9 BUILDING A PROJECT COMPETENT ORGANISATION BY DEPLOYING A PMO / PSO

To ensure that clients can make the best use of their time and resources, many project implementing organisations are taking the lead role in establishing formal project management processes and methodologies that encourage the delivery of work initiatives on time, within budget, and to an agreed-on level of quality.

Part of the ability to execute better, faster, and cheaper comes from the implementation of common processes and practices across the entire organisation. That way, there is a very little learning curve for the PM and the team members as they transition from one project to another. The larger an organisation gets, and the more projects that are executed at one time, the more difficult it becomes to enforce this organisational consistency. Without it, though, the full value of implementing a common project management methodology is not reached.

The project management office (PMO) synonymous to the project support offices (PSOs) can facilitate project management implementation, project monitoring and evaluation as well as many other services. Similar to the NDPW, most organisations should want a PMO that would be responsible for building project management skills and competencies within the organisation.

2.9.1 WHAT IS A PROJECT MANAGEMENT OFFICE?

Andrés (2009: 4) cites a number of definitions of a PMO:

- Parviz (2001): “A PMO is the administrative mechanism by which a focal point is provided for organisational project management activities.”
- PMI (2003): “An organisational body or entity assigned various responsibilities related to the centralised and coordinated management of those projects under its domain. The responsibilities of the PMO can range from providing project management support functions to actually being responsible for the direct management of a project.”
- Martin *et al.* (2007): “A project management office is a formal, centralised layer of control between senior management and project management.”

Rosenhead (2008: 1) refers to a PMO as a PSO and describes it as “... a business function charged with providing the organisation with the necessary supporting infrastructure and services to ensure that its portfolio of projects are being effectively and efficiently directed, managed and delivered.”

A typical PMO is a component within an organisation that comprises people with the necessary expertise and experienced specialists in the project and programme management environment who is responsible for deploying a consistent project management methodology within the organisation, including processes, templates, and best practices. This is not a one-time event, but a broad initiative that could cover a number of years.

The PMO can offer many potential services, depending on the needs of the organisation and the vision of the PMO sponsor. Before the PMO can be successful, it must gain agreement from the management team on its overall role and the general expectations it needs to achieve.

2.9.2 THE VALUE OF A PMO

Dai and Wells's (2004: 523-532) define the six main functions of the PMO and the links to improved project performance:

- Creation and maintenance of standards and methods;
- Centralised archive of lessons learned;
- Project administration support –facilitation of project web site, special meetings, war room and PM software support;
- Providing HR and staffing assistance such as identification of proper person for the project;
- PM consulting and mentoring on methodology, and dealing with exceptions, and
- Providing or arranging PM training.

Andersen *et al.*'s (2007: 97-104) research similarly suggest a set of six functions or responsibilities that good PMOs should have, according to their benchmark from organisations with an excellent project management record. The core PMO tasks include:

- Managing shared methodology and processes;
- Training and competence development;
- Offering support for projects, acting as consultants on demand;
- Contributing with recommendations only to project governance and selection of projects;
- Contributing with recommendations only to project quality assurance, and
- Offering support to project owner and support those in charge of portfolio management.

Although Andersen *et al.* (2007: 97-104) suggest a role of the PMO as a facilitator or consultant in line with Dai's research, they introduce new roles in areas such as project governance, portfolio management and support to senior management. The PMOs are presented as being able to function at different levels: for individual projects; at divisional level for portfolios, and at corporate level for strategy or prioritisation. At each level the PMOs have a different focus, from offering services to the individual projects to supporting senior manager for strategic alignment. One single list of features or functions does not reflect this new dimension. The reviewed researches prove that there is no consensus in the role or exact functions a PMO should have. Although there is no single formula for a standard PMO, there are some hints of the variation

that may be encountered between PMOs focusing in supporting projects, and PMOs supporting strategic management.

PMOs can be established to provide a narrow or broad set of services according to Mochal, (2002: 3), Hamilton (2006: 143), Crawford (2009: 1-5) and the Oracle (2009: 5), which include:

- Establishes and deploys a common set of project management processes and templates, which saves each PM, or each organisation, from having to create these on its own. These reusable project management components help projects start up more quickly and with less effort;
- Builds the methodology and updates it to account for improvements and best practices. For example, as new or revised processes and templates are made available, the PMO deploys them consistently to the organisation;
- Facilitates improved project team communications by having common processes, deliverables, and terminology. Less misunderstanding and confusion occurs within the organisation if everyone uses the same language and terminology for project-related work;
- Provides training to build core project management competencies and a common set of experiences. If the training is delivered by the PMO, there is a further reduction in overall training costs paid to outside vendors;
- Delivers project management coaching services to keep projects from getting into trouble. Projects at risk can also be coached to ensure they do not worsen;
- Tracks basic information on the current status of all projects in the organisation and provides project visibility to management in a common and consistent manner;
- Tracks organisation-wide metrics on the state of project management, project delivery, and the value being provided to the business. The PMO also assesses the general project delivery environment on an on-going basis to determine the improvements that have been made, and
- Acts as the overall advocate for project management to the organisation. This includes actively educating and selling managers and team members on the value gained through the use of consistent project management processes.

The PMO's value may be realised according to Andrés (2009: 10), through better project performance or through some other project, programme or portfolio management objective set by management. One way to assess the PMO's value is to track metrics that indicate how project management practice and project performance change overtime. Proposed metrics may be:

- Project performance - delivering on time;

- Project performance - delivering in budget;
- Project performance - delivering all agreed products or services;
- Customer satisfaction - product or service meeting customer expectations, and
- Combination of various metrics in a balanced scorecard.

Andrés (2009: 10) also include other benefits more related to processes and strategic considerations:

- Standardisation of operations;
- Efficient and effective operations;
- Better resource allocation, capacity planning;
- Quicker access to higher quality project information;
- More realistic prioritisation of work, and
- Organisational rather than silo decision-making.

While PMOs demand precious resources, the hope is that the investment in the PMOs will be more than saved by implementing common practices that allow every project within the organisation to be completed better, quicker and at lower cost.

2.9.3 THE REAL NEED FOR A PMO

The Cranfield School of Management (2009: 5-7) distinguishes between the key aspects of different types of PMOs in relation to the key activities they perform:

- Project support offices (PSO) - Focuses on improving the delivery of projects that have been approved by providing services to project managers;
- Project or programme offices (PO) – more strategic but supply focused with a role in governance and portfolio management;
- Project management offices (PMO) - Has a strong supply-side role in ensuring all projects are delivered successfully. It provides advice to the governance group on business cases, risks and project performance. It also has a policing or regulatory role in ensuring projects and programmes conform to agreed standards and best practices, and
- Enterprise project offices (EPO) - is essentially a support for investment governance and has a strong demand-side role in ensuring the organisation's investment decision-making will deliver the greatest benefit from the resources available. This includes involvement in organisation strategy development and project and programme identification as well as business cases for investment, resource planning and allocation. It should be able to

optimise the allocation of resources to match business priorities, by having complete information on all projects – current and planned. It should be able to provide a forecast of the overall business value that will be delivered by the investment portfolio and report regularly on overall benefits delivered. It will normally provide a comprehensive set of consultancy / advisory and strategic / governance services.

The first step to establish a PMO is to determine the organisation's real need for a PMO according to the Oracle (2009: 2). Determining the organisation's maturity level will assist in determining the organisation's shortcomings or perhaps to assess the current PMO competency levels. The Oracle (2009: 3) has developed the assessment that can be used for this purpose whereby the current level of maturity can be established:

- Level 1 is the reactive project management stage where methods are undocumented and delivery, budgets and schedules are uncontrolled. At this basic level, the PMO need to establish methods for project scheduling, time tracking, resource assignments, project tracking, oversight and support, and perhaps use an automated project dashboard to track project success.
- Level 2 occurs when organisations begin adopting repeatable processes. The main project management processes have been defined, but not constantly used. Still, project teams find it difficult to repeat earlier successes, and the project still risks exceeding budgets and schedules. At this established phase, PMOs should automate project budgeting, risk and issue tracking, requirements tracking, resource management. At Level 3 the PMOs show a commitment to proactive, standardised project management. They employ documented standard project management and delivery processes, and consistently use these processes organisation wide for project delivery. In this growth phase when these new tasks are mastered, the PMOs can focus on automating other functions such as financial management and business process modelling.
- Level 4 occurs when the PMOs demonstrate measured project management. Quantitative key performance indicators have been specified for project success and are monitored frequently. The PMOs have achieved predictable and controllable project delivery, and is now free to become more innovative.
- At Level 5, the most mature PMO organisations continuously improve project management. At this level, the well-established and 'connected' PMOs can focus on automating vendor management, collaboration through social networks and blogs – and communication through text, IM, video or mobile.

2.9.4 PMO BEST PRACTICES

The Oracle (2009: 4-5) argues that the best-performing PMOs reduce business risk, optimise resources and contribute to business growth through a portfolio management office:

- Reduce business risk. When it comes to reducing business risk, top PMOs establish a flexible, end-to-end project management process that balances rigor with overhead. They support the process with simple-to-use tools to plan, manage, track and report all project activities. They make the tools available over the organisation's intranet along with examples and instructional support. They provide formal training, coaching and mentoring to both organisation and to PMs to develop competent PMs and a project competent organisation. They are flexible in sourcing and providing project management resources. They provide project management assistance, such as consulting, problem solving, audits and expertise. It promotes standardisation, consistency of approach and delivery, assurance, training and a culture where past successes and failures are not forgotten, but treasured and passed on as best practices to be used across the change portfolio and across geographic and time frontiers. The PMO also instils consistency, efficiency, common language, information on past schedules, budgets, methodologies, training methods, and so forth, it reduces start up and mobilisation timescales and provide predictable delivery costs and time schedules;
- Optimise resources. Highly effective PMOs optimise resources by expanding PMO oversight to include business processes and project monitoring. PMOs institutionalise project management discipline into the culture to free up resources to focus on programme management, and use programme-level visibility to identify and alleviate resource contention issues. PMOs educate the business, and internal and external stakeholders about their shared responsibilities for ensuring programme success, and expand governance body membership to represent the expanded stakeholder set of programmes. They establish communication programmes to keep all stakeholders informed and committed to programme success, and provide collaboration tools to facilitate the work of the organisation, and
- Contribute to business growth. The best-performing PMOs contribute to business growth by enlarging the breadth of PMO influence to extend from strategy formulation through benefits realisation. They also position the PMO organisationally outside projects division to give it independence and senior management sponsorship. They design governance to focus senior management on strategic issues. High-performing PMO also integrate benefits realisation into the entire lifecycle starting with planning, and report on it regularly. They implement portfolio management tools that provide high-level visibility and analysis that inform decision makers. The broader PMO staff competencies include strategic planning

and investment analysis, and they implement knowledge management tools to capture, categorise and distribute best practices and lessons learned.

Crawford (2009: 6) highlights a number of important benefits as project management is institutionalised within an organisation by means of a PMO. First, by providing a career path for PMs in which careers can be developed and maintained around competency standards, helps the organisation to stem the 'brain drain' that many organisations are experiencing in these times of tight labour markets. This preservation of an organisation's intellectual capital is just one way PMOs add value to an organisation. The culture shift that takes place as an organisation begins to increasingly focus on projects can bring improvements in performance in many areas, notably time-to-market, reduced project failures, improve communication across the organisation, improved standards, and the initiation of a project portfolio management system. Focus on project management from the executive level will then bring a new emphasis on cost and quality, on project prioritisation, and a closer convergence of strategic planning with project execution: on delivering the right things—and doing it on time, on budget, and up to quality standards.

According to the Oracle (2009: 2), once best practice basics are in place, the PMO has demonstrated improvement in project delivery and the office has gained credibility, management can consider broadening the PMO scope beyond project management to programme management and portfolio management, which will help mitigate business risk.

Leingang (2007: 1) emphasises the importance of the PMO to always be on the lookout for ways to apply their resources to activities that offer more to their organisations. Leingang (2007: 1) suggests that too often, the portfolio approach glorifies the role of the PMO, that functions comparable to an order taker in most organisations, responding to project requests, subjecting them to a pre-determined assessment process, driving them to a satisfactory conclusion, and moving on. However, Leingang argues that an exceptional PMO manager should think beyond efficiently juggling clutches of projects and should rather also consider the effect of each project on the organisation as a whole. A good PMO will glue and align business processes together by not just evaluating whether a particular project is progressing satisfactory, but will also deliver significant business value by identifying potential areas of improvement and facilitating corrective measures. The PMO, according to Leingang (2007: 2), will also assist regulatory compliance, which is very important, and also ease the administrative burden of PMs.

A strategic PMO can also be a catalyst for improvement where the right compliance solution hinges on a well thought out strategically aligned programmes and tools. This will enable an organisation to proactively define, document and implement its processes and controls, while linking them to operations thereby meeting their obligations faster and with fewer resources. The PMO, according to Leingang (2007: 2), represents a critical mass of skills and a highly leveraged position from which results can be delivered across the entire organisation. An exceptional PMO manager thinks beyond efficiently juggling a clutch of projects and considers, from the top down, the effect of each project, or project cluster or on the organisation as a whole.

An excellent PMO is adept at establishing and implementing as well as maintaining and improving business processes. Leingang (2007: 2) argues that PMOs can create the right mix of change-the-business and run the business-as-usual operations, and can foster a climate of responsibility and accountability amongst all staff.

PMOs, according to Makar (2007: 1-2), can provide several key functions which can range from the classic project management processes found in the PMBOK to the administrative tasks sometimes bestowed upon business planners or staff in generalist positions:

- Governance. The PMO's governance function plays an important role by providing decision support for project sponsors, decision makers, and stakeholders involved in the programme, organisation and organisation. Documenting governance decisions and tracking action items for future governance sessions provides the administrative support needed for effective decision-making;
- Performance management. The performance management function integrates project level status reporting and generates the programme level status for executive reviews. The PMO investigates specific performance issues and communicates early warning signs of troubled projects. The PMO also enforces consistent performance reporting guidelines so each project reports project performance consistently;
- Schedule management. The schedule management function assists the programme by identifying project level milestones and integrating them into an overall programme level plan. The programme level plan is a summarised view of critical programme milestones. If the programme is used as leveraging tools, the PMO may integrate the detailed project schedules into a detailed programme schedule. The PMO also monitors schedule variances and recommends corrective action;

- Financial management. Tracking actual expenditure and forecasting future expenditure and costs while navigating an organisation's internal billing and reconciliation procedures can often be a full time role within the PMO. Reporting expenditure and cost variances and adjusting programme forecasts based on change control is a critical function for fiscal success, especially within the NDPW;
- Risk, issue and scope management. The processes of risk management, issue management and scope management apply to programmes as well as individual projects. The PMO supports individual projects by identifying and evaluating risk, issues and change requests to a programme. The PMO manages the specific reviews and documents key decisions. Projects are organised within a programme due to synergies gained from working as an integrated set of activities. The key processes of risk, issue and scope management also need to be integrated for mutual benefit;
- Resource management. Resource allocation and resource capacity needs to be managed across the programme for effective utilisation. Depending on how well resources are allocated, different projects may have additional resource capacity and skills that can be shared across the programme. By establishing a resource management model and tracking utilisation, programmes can make better decisions for project prioritisation. The key to an effective resource management model is the quality and reliability of the underlying data. The PMO manages the data collection and reporting process;
- Quality management. The PMO provides quality management by providing expertise in quality control, quality assurance, coordinating quality inspections, and process coaching. This function is often perceived as administrative overhead and intrusive to individual projects, however, it is a critical function for consistent delivery. The PMO should inspect project level deliverables and more importantly provide coaching to project teams requiring additional project management support;
- Communications management: Every project and programme requires a communications plan. Although the target audience and frequency may vary at the programme and project levels, the PMO creates the overall programme communication standards for projects to follow. The PMO will also assist the programme manager in developing necessary communications to programme stakeholders, and
- Supplier management: The PMO supports supplier management by monitoring the various suppliers or contractors and consultants providing services to the programme and notifying the programme manager of supplier performance issues. Supplier performance scorecards are integrated through the PMO and individual suppliers work with the PMO to understand performance-reporting standards.

These functions are specific to project management delivery; however, additional administrative functions such as document management and facility management may be supported. The scope of functions provided depends on the form and needs within the programme, organisation or organisation. Once an organisation determines the form of PMO needed, it can use these functions as a PMO checklist to develop the project office.

When an organisation first establishes a PMO, it should have a PMO development plan. Each of these processes can appear as high-level tasks in the development plan to ensure the PMO is delivering all its functions. Organisations may prioritise specific functions depending on need and project management maturity; however, a fully functioning PMO has established processes that integrate and roll up through the programme, organisation and organisation.

Makar (2007: 2) argues that PMOs are increasingly being viewed as an essential component that enables the success of projects, and hence, the future success of the entire organisation. At a tactical level, the value provided by a PMO is summarised below. Although a PMO can be established to provide a narrow or broad set of services, this list includes many of the common responsibilities a full PMO would perform:

- The PMO establishes and deploys a common set of project management processes and templates, which saves each PM or organisation from having to create these on their own. These reusable project management components help projects start-up more quickly and with much less effort;
- The PMO builds the methodology and updates it as needed to account for improvements and best practices. The PMO deploys new or revised processes and templates consistently to the organisation as it is made available;
- The PMO facilitates improved project team communication by having common processes, deliverables, and terminology. There is less misunderstanding and confusion within the organisation if everyone uses the same language and terminology for project related work;
- The PMO sets up and supports a common repository so that prior project management deliverables can be candidates for reuse by similar projects, further reducing project start-up time;
- The PMO provides training (internal or through vendors) to build core project management competencies and a common set of experiences. If the training is delivered by the PMO, there is a further reduction in overall training costs paid to outside vendors;

- The PMO delivers project management coaching services to keep projects from getting into trouble. Projects at risk can also be coached to ensure that they do not get any worse;
- The PMO tracks basic information on the current status of all projects in the organisation and provides project visibility to management in a common and consistent manner;
- The PMO tracks organisation-wide metrics on the state of project management, project delivery and the value being provided to the business by project management in general, and the PMO specifically, and
- The PMO acts as the overall advocate for project management to the organisation. This includes educating and selling management and team members on the value gained through the use of consistent project management processes.

Tenstep (2007: 5) explains the real value of a PMO whereby the PMO will help people in the organisation be more productive and help PMs complete projects within expectations. Overall success will hinge on how well the use of the consistent project management methodology is integrated into the organisational culture. In other words, if the PMO rolls out a project management initiative, but the staff members do not internalise project management into their normal routine, the PMO will not have been successful. Likewise, if the central PMO is disbanded without the processes being integrated into part of the organisational culture, the PMO will be less successful.

Because implementing project management is a process and not an event, the PMO should be established with a long-term horizon in mind. Of course, business conditions change, and PMOs are not immune to cutbacks. However, if the PMO is established with a short-term deployment mind-set, and not a long-term culture change mind-set, it will ultimately be unsuccessful.

Tenstep (2007: 5) adds that PMOs can be the major instigator of culture change associated with deploying good project management processes and practices. As part of this effort, the PMO may take responsibility for consolidating status, performing quality audits, and improving project management competencies. However, it needs to be clear that the responsibility of successfully completing the project still rests with the PM. The PMO can help the PM be successful, but the PMO is not taking over the accountability for individual project success.

A central task of the PMO could include portfolio analysis that is an on-going evaluation of all projects, project milestones and business processes in the delivery of projects, leading to

recommendations to improve project implementation by continuously reviewing planning processes, business process, collection and interpretation. Success, failure, current problems, problems in the future, with everything being visible and above the water within the PMO its staff can spot hold-ups, spot projects in trouble and escalate problems to the right level and facilitate corrective actions in time.

2.9.5 CRITICAL SUCCESS FACTORS FOR ESTABLISHING PMOS

It is in the host organisation's context and needs that will determine what the PMO needs to help with. Both the PMO and the organisation may go through re-structuring and co-evolving overtime, re-defining the success factors for the PMO.

The PMO functions should take into account of the current conditions, whether it is tensions or needs, for example the economic tension from projects overrun, or resource and skills tensions from the lack of qualified PMs, so that the design of the PMO allows for delivery on objectives such as improved budgeting and cost control; and training for PMs, thus positioning itself for success.

Andersen *et al.* (2007: 97-104) provide the following list of critical success factors for establishing a PMO:

- Design the PMO based on the objectives;
- Cover the true needs of the organisation, as identified from the PMO stakeholders;
- Ensure top management support;
- PMO services should be free of charge to the projects;
- Do not develop the PMO into a bureaucratic control unit;
- Resource the PMO with experienced senior PMs with broad skills;
- Focus on improved project management practices, and
- Allow the PMO to progress at the right speed, starting at core needs and only moving to Governance and Portfolio Management when the organisation maturity is higher and senior management sees value in the PMO assisting in those other functions.

Desouza *et al.* (2006: 414-425) provide comparable critical success factors for PMOs:

- PMO to fit in the organisation culture. If there is a centralised structure, the PMO should be designed top-down. If it is decentralised, a bottom-up design with the voluntary

collaboration of PMs would be best. Management support for the PMO is in all cases required;

- Focus on the drivers or background that PMO stakeholders see as important;
- Segmentation of PMs in two groups: business oriented PMs for strategic, large projects; and technical oriented PMs for technology specific projects;
- Clear reporting lines;
- PMO charter and related documentation, and
- Metrics to evaluate PMOs. Scores are compared to past performance and compared to outside benchmarks.

Andrés (2009: 15) suggest the following three step approach when setting up a new PMO or improving an existing PMO:

- What is the starting point? Find out about the context, i.e. organisational structure and culture; and the current level of project management maturity by using a maturity model;
- What are the expectations? Ask the role players such as the PMs, functional managers, support divisions, and consultants what help they need, what are the challenges they face when implementing and running projects, what would they prefer to see changing or improving. Do interviews or surveys, and
- Focus on real needs and balance. Create a plan to design a PMO that focuses on what is has been asked, not what books or theory say. Is it PM training? A resource management tool? Help facilitating risk management? Monitoring project progress? Ensure PMO responsibilities fit with the available tools, skill sets, processes and structure -or adjust for balance. Will the PMO role fit well in the organisational culture in terms of the way things are done, and structure?

Crawford (2009: 4) provides seven tips for success and advises that when deploying the PMO, the best way to win converts for the PMO method of managing projects is by adding value and getting results as quickly as possible:

- Rein in runaway projects;
- Assist project start-ups and establish estimating and risk management processes;
- Review and manage the project portfolio;
- Conduct project reviews and audits;
- Organise and manage the resource pool;
- Identify and develop PMs, and
- Establish and enforce a project management environment.

Andrés (2009: 15) adds that the major reason that some PMOs are short-lived or fail is because they do not fit in the organisation's context, are too ambitious, impose changes that not all people agree with and lack management support. It is key to start focusing on few true needs - what people see of value to them, e.g. some templates and with realistic objectives and metrics, and show the delivered benefits as soon as possible in order to position the PMO as delivering value to the organisation.

2.9.6 WHAT ABOUT RECESSION?

Quagliata (2009: 1-2) argues that a recession does not mean that a project management office should slow down, much less shut down. Quagliata identified five practical activities that a PMO can embark on to keep busy and improve project management efforts in quiet times when there are fewer projects and obligations. These suggestions are particularly good ideas in a slow economy because they help justify the cost of maintaining a PMO by reducing other costs while maintaining capabilities:

- Review documentation and processes. Is there room for improvement in the project documentation and processes? Can it be streamlined? Are there redundant documentation and processes? The PMO personnel should go through every document to assess its value;
- Start looking at more data. Chances are that the organisation has been gathering some type of data on projects in terms of duration, cost and lessons learned. Now is the time to start looking at that data. Let the data illustrate the trends and problem areas. Form special investigative groups within the PMO to conduct in-depth analysis of the problems. The analysis could produce a top-ten list of areas for improvement that could keep the PMO busy during the down times and improve project management throughout the organisation;
- Conduct more internal training. If project spending is slowing down, then it is a good bet that the training budget will shrink as well. Why not use this slow time to conduct own in-house training? Some of the topic areas could include requirements gathering and management, estimating, and improved communication among stakeholders. This approach not only shares information, but it also helps to build a relationship between the PMO and project leaders. It also shows the value of the PMO to the organisation;
- Be the organisation's own consultant. Is the PMO working with consultants on a variety of areas, such as improving requirements gathering and management, or estimating? If so, consider letting the consultants go and be the organisation's own consultant. Most PMOs are made up of senior project leaders and programme management people who should be

able to handle the consultant's areas of specialty. This approach not only helps keep the PMO busy during slow times, but it helps cut organisational spending, and

- Look for automation opportunities. Finally, remember that the slow periods will not last forever. Take the time now to look for areas that could be improved through automation. Many organisations still manage projects in a manual manner, using paper documents and forms. Can the forms be automated? Not only does automation improve ease, but also it allows the PMO the opportunity to start gathering data into a database. That data becomes much more valuable in a useable format because it can be studied and trended. A slowdown gives the PMO an opportunity to identify potential internal automation projects, do research on off-the-shelf products, and even gather high-level requirements.

2.9.7 SIGNIFICANT IMPACT OF THE PMO / PSO

A survey of 291 US project professionals across sectors, as cited by Gale (2010: 2) revealed that the majority are working on high-value strategic tasks, including implementing or managing governance processes (72%), advising executives (64%) and participating in strategic planning (62%). Part of the reason they are gaining organisational clout comes down to performance as they reduced the number of failed projects by 31%, delivered 30% of projects under budget and saved their clients millions of Dollars.

Piers (2010 cited by Gale, 2010: 2) states: “In today’s increasingly competitive environment, organisations need to formalise and improve on the way projects are conducted,” and “the PMO is being recognised by a number of organisations to be a project management business function structure of increasing importance.” Rosenhead (2008: 2-5) tabulates the real benefits of a PSO, which is synonymous to the PMO, in relation to their functions (Table 2.20).

PMO’s that are seen as merely administrative support, struggle to gain traction within the organisation. Valuable PMOs set processes and track projects, but advanced PMOs also deal with governance, resource optimisation, performance measurement and portfolio management according to Gale (2010: 3). PMOs show the greatest value when portfolio performance is related to the strategic objectives of the organisation. Petalas (2010 cited by Gale, 2010: 2) states: “PM leaders cannot just rephrase data from one project to another. They have to be able to critically analyse the problems and be seen as an organisation that can design and implement solutions.” Gale (2010: 5) argues that it is important for the PMO to talk to both sides as executives want transparency and the PMs need an advocate, which is the PMO’s role. When strategic and important projects succeed the value and importance is then recognised by all.

Table 2.20: The real benefits of a PSO in relation to its functions (Rosenhead, 2008: 2-5) - Part 1

What PSOs can do	The benefits to the organisation
<ul style="list-style-type: none"> • Support the written project management system. 	<ul style="list-style-type: none"> • Staff will know where they can get support for their projects; • Staff in the PSO will encourage people to use the same processes e.g. getting approval to ensure there is consistency of delivery across the organisation; • Use the same terminology and know what their responsibilities are e.g. project sponsor or PM; • It will ensure people practice prevention by carrying out risk and stakeholder analysis as well as putting plans into operation to manage them; • Realistic project plans will be developed and delivered; • The PSO will ensure monitoring of projects becomes an active process, and • Formal project closure takes place with learning identified.
<ul style="list-style-type: none"> • Provide a repository for experience and knowledge gained in the organisation. 	<p>There are many lessons learned on projects. But, they remain with that individual or project team. The project office can identify the real lessons learned and disseminate these to others on similar types of projects. This can save valuable time and effort across the project community.</p>
<ul style="list-style-type: none"> • Coach PMs and project sponsors. 	<p>This is a critical role for the organisation. It can save valuable training costs by using staff in the PSO to actively coach people to use the internal project management support.</p>
<ul style="list-style-type: none"> • Business cases are well defined. 	<p>This will ensure that there is a solid reason for the project the business case as well as ensuring there is a link with the overall objectives of the organisation. It is often true that PMs struggle to identify the true costs and true benefits of projects. The PSO will through its internal expertise be able to support staff in this important area.</p>
<ul style="list-style-type: none"> • Identifies the links between projects. 	<p>There are often links with different projects. The PSO will ensure links are clear working with the relevant PMs and senior managers.</p>
<ul style="list-style-type: none"> • Manage risks consistently and effectively. 	<p>The PSO will be in a unique position being able to see across projects ensuring that any new risks, avoidance or containment strategies that are developed can be applied to other projects.</p>
<ul style="list-style-type: none"> • Monitor and control processes. 	<p>All projects need to be monitored effectively. The PSO can support the project sponsor and PM by helping to create robust monitoring and control processes. It is not envisaged that the PSO will take over the formal monitoring role of the project sponsor.</p>
<ul style="list-style-type: none"> • Provide a library facility. 	<p>Where does the final paperwork finish up for completes or abandoned projects? What is the quality of this paperwork like? The PSO can provide a library service, storing project files, but also advising on the type of documentation that is necessary for audit purposes; for research purposes e.g. estimates, planning schedules and for legal reasons.</p>
<ul style="list-style-type: none"> • Use of project management software. 	<p>There are many project management tools on the market to support the drive to deliver projects effectively. The PSO should be the central hub of any software use They can provide the training and internal support needed for the organisation.</p>

Table 2.20 - Part 2

<ul style="list-style-type: none"> • Capture experience and knowledge. 	<p>The PSO can provide a wide range of data on:</p> <ul style="list-style-type: none"> • The skills needed to manage a particular project; • The skills available in the organisation; • Methods that work and methods that do not work; • Measurement criteria e.g. success criteria, estimates of time and cost against particular activities, • Common faults in previous projects including lessons learned reports.
<ul style="list-style-type: none"> • Provide specialist skills. 	<p>It is never the intention the PSO provide the staff to manage the project. They may however provide consultative support or a range of other skills by agreement. They can also facilitate bringing in of specialist skills and expertise.</p>
<ul style="list-style-type: none"> • Benefit management. 	<p>It is essential that all projects have agreed project benefits set out early in its life. The PSO will monitor the achievement of benefits as well as link it to an overall benefits management plan for the authority.</p>
<ul style="list-style-type: none"> • Simplify project management structures. 	<p>There are many project management structures, some are hugely complex involving many partners others very simple. The PSO will support each project advising on the most appropriate structure and working with the key players to get it right.</p>

2.9.8 PMS VERSUS THE PMO

In theory, according to Makar (2010: 1), PMOs and PMs work together to deliver value to the organisation in a consistent manner. In practice, PMOs and PMs often step on each other's toes in a clash between results and processes.

From the PM viewpoint, the PM's role is to deliver results. The project management processes are tools for PMs to deliver work consistently. If a process is too overwhelming, the PMs will shortcut the process to deliver the project. From a PMO perspective, all the projects should be delivering according to a common project management process. Ensuring project teams following consistent processes ensures repeatable results and uniform communication. The project needs to be delivered on time, but it also needs to follow the prescribed process. • The two different perspectives of 'project versus process' can often cause friction between the two groups as well as another supporting departments within the organisation. The PMO can quickly be perceived as non-value adding overhead and PMs can be viewed as non-compliant and resisting process. Having worked in each group, it was found that PMOs and PMs could achieve harmony, starting with the following five practices, from the PM perspective as listed by Makar (2010: 1):

- Reuse project status reports. Do not ask the PM to fill out another form. Processes become overbearing when the same information is requested multiple times and needs to be

populated in different formats. Status reporting is the frequent offender that causes project management friction. Each month, the PMO governance function requires a status update for each project in the portfolio. Instead of reusing the project-level status report, the PM is asked to fill out a summary form.

- A simple solution is to adopt a common status-reporting format that accurately conveys status at the project level and can be rolled up into a portfolio summary. Organisations can develop scorecard templates that allow data to be extracted and integrated into a PMO-level summary report. If the organisation does not have the technical capability to roll up project data, a simpler process is to have the PMO review the status report and create the consolidate PMO-level status report.
- Staff the PMO with experience. Effective PMOs are staffed with people who are experts in both process and delivery. Rotating experienced PMs into PMO roles will help transfer PM experience across the organisation. The PMO gains credibility with the delivery teams when members of the PMO have dealt with similar complex project experiences. Staffing the PMO with administrative resources to track documents only provides value in process audits instead of project delivery. Finding skilled PMs within the PMO who have real work experience is invaluable to novice project or programme managers. The PMO should act as coach and guide to avoid project management disasters.
- Actively participate in project delivery. A PMO does not need to confine itself to staff roles. Financials, portfolio reviews, resource management and milestone tracking are administrative; however, the PMO adds more value to the project when it understands the projects within the portfolio. Inquiring why a project has not launched within the organisation's 180-day average when it launched in 182 days does not add value while understanding a project's key issues and risks and helping raise the visibility does.
- An effective PMO that understands the project goals, impact to the business, and status within the portfolio is a useful resource. A PMO can provide better insight into available portfolio resources and can be a point of escalation for issue and risk management. The PMO doesn't manage the project, but provides the expertise to guide the PM along.
- Proactively respond to process requests. PMOs want PMs to follow process. PMs are willing to follow the process as long as the process is responsive and timely. A PMO's credibility is undermined when a request is submitted and the PM has to wait weeks for the PMO's response. If the PMO takes two to three weeks for a new project request to be processed, the process becomes a roadblock. The PMO cannot hinder project delivery. It needs to act as a catalyst for the project and respond effectively.

- Champion a community of practice. PMOs have an excellent opportunity to improve the level of project management within an organisation. The PMO is an independent and dedicated resource that can invest resources into project management improvement. Effective PMOs foster a learning environment for project management across the organisation. One approach to developing a learning environment is to sponsor a community of practice. A community of practice is simply a group of PMs who share lessons learned and best practices. The best practices emerge from the people actually doing the work rather than a top-down process.

PMOs still need to implement processes with a top-down approach. By incorporating the standards and practices into the community of practice, change management and process adoption become easier. Both the PMO and PMs are part of the solution to improve project delivery within the organisation.

Makar (2010: 2) adds five tips from a PM's perspective, on how to improve PMO involvement in project delivery are just the start. As PMs and PMOs openly discuss better project management processes, additional best practices can and will be identified. PMOs have administrative processes that can be misconstrued as overhead or potential roadblocks to project delivery. Effective PMOs are able to integrate these processes into the delivery cycle without causing bureaucratic drag. An effective PMO is a resource for PMs to leverage. PMs need to understand the role of the PMO in portfolio governance, process quality assurance and project management coaching. Makar (2010: 2) provides five tips that will help PMs improve their interaction with the PMO.

- Support the PMO requests for information. Communications management and portfolio governance are key functions within a PMO. The project does not operate in a vacuum and needs to report out across the portfolio. PMs need to recognise the PMO's obligation to communicate project status and performance for portfolio reviews. Both PMs and the PMO need to work together to avoid replicating project information in different formats. Aligning report expectations with the project artefacts produced by the project will minimise the burden to communicate repeatedly to various management levels.

Follow the process to deliver the project - Project teams need to follow an organisation's established project management procedures to ensure consistent results. The PMO's role for process assurance is a quality management function. PMs should recognise the PMO's responsibility to audit project deliverables. The PMO is not a malicious entity bent on

inhibiting project progress when a deliverable is not signed off. However, it is the PMO's role to ensure process is followed. Problems arise when the process becomes too cumbersome and the PMO does not listen to PM feedback. Process improvement is an on-going activity with any organisation and both groups need to work together to iteratively refine and improve the process.

- Communicate key issues and risks to the PMO. PMs should view the PMO as a project asset instead of a project liability. At the programme level, the PMO is the central resource to monitor and track programme level issues, risks and change requests. At the organisation level, the PMO often reports directly to senior or executive management and can help communicate top-level issues across the portfolio. At the organisation level, the organisation PMO is a critical success factor for successful portfolio management. All of these roles require interaction and communication with the project teams.

Instead of creatively shaping a troubled project status to the PMO, the PM should report the objective status and leverage the PMO to request assistance. The PMO wants to know the problems within the portfolio and may be able to provide additional resources or propose alternative solutions. Since the PMO monitors the portfolio, it has a broader perspective of all the projects and can help prioritise issues and problems accordingly.

- Engage the PMO in the tollgate process. Since the PMO often inquires about status within the portfolio, involving them in the project's gate review process is an effective approach to communicate status on a regular basis. In some organisations, PMOs manage the tollgate process for the PM and proactively monitor approaching tollgates and help the PM facilitate the approval process. Engaging the PMO in a tollgate will also provide an objective assessment of the project and provide additional insight into issues and risks not perceived by the PM. Since the PMO is engaged in multiple projects, similar issues and lessons learned can be shared.

PMs can view the tollgate as a low-value-add activity since scheduling a tollgate and maintaining the project schedule often conflict. Due to scheduling conflicts and required sign-offs, the project often progresses beyond the tollgate and resolves any issues once the tollgate has been conducted. The PMO can assist with this process by scheduling and coordinating the tollgate process while PM can focus on project delivery.

- Be an active participant in portfolio governance. A PMO cannot effectively support projects outside their visibility. PMs need to communicate project start-up early and initiation

requests through the PMO. Unstructured organisations often have projects initiate without sufficient resources or skills needed for the project success. The PMO can help assign resources and support the project, but it needs to know the project exists.

If the PMO is viewed as too bureaucratic, PMs may minimise the size of the project to the PMO. Control over can be quickly lost and need to be rescued or cancelled all because they did not initiate the project correctly and assign appropriate resources. The PMO can be a champion for project success, but the PMO needs to know about the emerging projects in the portfolio. PMs need to work with the PMO to ensure proper governance is in place.

- Be an active participant in portfolio governance. A PMO cannot effectively support projects outside their visibility. PMs need to communicate project start-up early and initiation requests through the PMO. Unstructured organisations often have projects initiate without sufficient resources or skills needed for the project success. The PMO can help assign resources and support the project, but it needs to know the project exists.

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An effective PMO is designed to help, not hinder project development. PMOs need to be a catalyst for project success and PMs need to leverage the PMO as a tool for project delivery. The balance between PMO process requirements and project delivery can be difficult to maintain. Both groups need to view each other as a critical success factors to deliver the project for the client and need to communicate their needs to refine the process.

2.9.9 BOTTOM LINE RECOMMENDATIONS

To succeed in today's challenging innovation environment, according to Isfahani (2010: 9), to create the innovation mind-set, and deliver business value via profitable growth, organisations must ensure that the PMO plays a catalytic role that demands organisations to:

- Build an innovation-oriented culture;
- Organise for innovation success.
- Motivate. Provide the right incentives to ensure lasting impact and continued cultural advancement;

- Understand how the organisation innovates. Organisations may pursue multiple alternatives to find and market new products. These include strategic acquisitions, external networks using partners and the academic community, internal skunk works, and affiliated idea factories;
- Keep an eye on early costs. An improvement in the process surrounding the project life cycles, improved communication and executive visibility as well as a reduction in related costs are a vital link to gaining a competitive advantage;
- Communication and collaboration. A variety of tools can help facilitate these processes and help to shorten the project lifecycle by involving internal and external constituencies regardless of geographic location, and
- Effectively use toolsets at their disposal. A variety of powerful engines can provide the depth of analysis, project and portfolio strengths, and optimisation capabilities needed to deliver business value.

The growing awareness of the PMO / PSOs is evident in professional literature and amongst PM professionals. Organisations are finding that they need to standardise how they manage projects. They are seeing that the process takes much more than just training the staff. It requires a holistic approach, covering many aspects of work and the organisational culture. Williams (2006 cited by Klein, 2007: 2) believes that “PMs should be freed up by the PMO / PSOs to do what they do best - work on projects.”

A dedicated PMO / PSO provides the oversight and coordination to deliver projects on time and on budget by managing and reporting on the cost, resources, risk, scope, total schedule, and quality across all projects. To be successful and add real value, the PMO / PSOs must be properly empowered and equipped with the right tools.

The Cranfield School of Management’s (2009: 7) research relative to 150 organisations revealed that organisations where PMOs were more involved in post-implementation review of success in changes made and benefits realised, and change and benefits implementation planning were more successful. Furthermore, PMO involvement also led to greater satisfaction with regards to cost, time, and quality reviews; transfer of lessons learned to future projects, and the identification of project benefits and the quality of business cases. In the less successful organisations these activities were generally deemed to be done poorly, whether or not they had a PMO.

The Cranfield School of Management (2009: 8) suggests that PMOs contribute most to project success and management satisfaction when they are involved in the ‘downstream’ project activities and the feedback or control loop following project completion. In this way the PMO plays a role in project governance and influences demand-side as well as supply-side activities by enabling the organisation to learn from its experiences and develop its ‘recipe for success’, in project selection and delivery. In the less successful organisations the PMOs are rarely involved in the activities and therefore make a more limited contribution.

2.10 EFFECTIVENESS OF THE CONSTRUCTION INDUSTRY DEVELOPMENT BOARD’S OBJECTIVES

The cidb was established to provide leadership to stakeholders and to stimulate sustainable growth, reform and improvement of the construction sector for effective delivery and the industry’s improved role in the country’s economy. The cidb has partnered with First National Bank (FNB) to provide integrated support to emerging contractors registered with the cidb, creating access to finance and business development.

The cidb, which is responsible to the Minister of Public Works, comprises private and public sector individuals appointed by the Minister on the basis of their individual knowledge and expertise. The cidb is supported by a professional and knowledge-based organisation, structured to drive the strategic objectives of the cidb.

The Minister of Public Works has under Section 33 of the Construction Industry Development Board Act, 2000, (Act No. 38 of 2000) published regulations for public comment. The amendments provide for improved and simplified registration requirements, adapting grading criteria and tender value ranges to provide for inflation and alignment of legal procedures. The cidb provides over the counter registration for Grade 1 contractors since January 2008. It takes 48 hours from registration for Grade 1 contractors to be active on the cidb website. However, registration for higher grades or revision of grades takes two to three months.

2.10.1 THE CIDB’S MANDATE

The cidb, a Schedule 3A public entity was established by Act of Parliament to promote a regulatory and developmental framework that builds the construction delivery capability for South Africa’s social and economic growth. The cidb's mandate is to provide strategic leadership, promote sustainable growth, promote improved performance and best practise,

promote improved procurement and delivery management, and develop methods for monitoring and regulating the performance and registration of projects and contractors to build a proudly South African construction industry that delivers to globally competitive standards.

The cidb's focus is on:

- Sustainable growth, capacity development and empowerment;
- Improved industry performance and best practice;
- A transformed industry, underpinned by consistent and ethical procurement practices;
- Engendered value to clients and society, and
- Toolkit for infrastructure delivery management.

The cidb Act mandates the Board to:

- Establish a national register of contractors and of construction projects to systematically regulate, monitor and promote the performance of the industry for sustainable growth, delivery and empowerment;
- Promote improved delivery management capacity and the uniform application of procurement policy throughout all spheres of government;
- Promote improved performance and best practice of public and private sector clients, contractors and other participants in the construction delivery process;
- Promote sustainable participation of the emerging sector, and
- Provide strategic direction and develop effective partnerships for growth, reform and improvement of the construction sector.

2.10.2 UNDERSTANDING THE CIDB REQUIREMENTS FOR CONSTRUCTION PROCUREMENT

The cidb Standard for Uniformity in Construction Procurement was first published in June 2004. It has subsequently been revised in terms of Board Notice 68 of 2005 in Government Gazette 27831 of 22 July 2005 and Board Notice 99 of 2005 in Government Gazette 28127 of 14 October 2005.

The cidb has also updated its Construction Procurement Best Practice Library in terms of Board Notice 100 of 2005 in Government Gazette 28127 of 14 October 2005. Two new Best Practice Guidelines have been introduced to provide much needed guidance on the procurement of professional services and the adoption of procurement strategies to promote the participation of smaller registered contractors in public contracts so that they can grow and develop. The cidb

has developed standardised procurement documents for Engineering and Construction Works and Professional Services to facilitate compliance with the cidb Standard for Uniformity in Construction Procurement.

The cidb Act establishes:

- A Code of Conduct for all the parties engaged in construction procurement;
- A standard for uniformity in construction procurement;
- A register of contractors;
- A register of projects;
- A library of construction procurement best practice, and
- Construction procurement best practice.

Basic elements of cidb Code of Conduct for the parties engaged in construction procurement requires that the parties in any public or private construction-related procurement should deal with each other in the following manner:

- Behave equitably, honestly and transparently;
- Discharge duties and obligations timely and with integrity;
- Comply with all applicable legislation and associated regulations;
- Satisfy all relevant requirements established in procurement documents;
- Avoid conflicts of interest, and
- Not maliciously or recklessly, injure or attempt to injure the reputation of another party.

The code provides examples of what are acceptable and unacceptable actions and allows the cidb to convene an inquiry into any breach of the code of conduct.

- Disciplinary actions that the cidb can impose include:
 - Issue a warning to the accuse;
 - Reprimand the accused;
 - Report the accused to the Auditor-General or the Public Protector or both impose a fine not exceeding R100 000.00 on the accused;
 - Suspend the accused from participating in public sector procurement for a period of time, and
 - Make a cost determination to defray all or part of the costs incurred to conduct the investigation.
- The cidb standard for uniformity in construction procurement establishes minimum requirements that:

- Promote cost efficiencies through the adoption of a uniform structure for procurement documents and standard component documents and generic and uniform solicitation procedures;
- Provide transparent, fair and equitable procurement methods and procedures in critical areas in the solicitation process;
- Ensure that the forms of contract that are used are fair and equitable for all the parties to a contract, and
- Enable risk, responsibilities and obligations to be clearly identified.
- Establishes a uniform framework for procurement and minimum requirements for:
 - The solicitation of tender offers;
 - The manner in which quality is to be incorporated in procurement documents;
 - The formatting and compilation of procurement documents, and
 - The application of the register of contractors to public sector contracts.
- Identifies the best practice guidelines published by the cidb, the South African Institution of Civil Engineering and Standards South Africa;
- Requires that specific standard forms of contracts to be used, with minimal project specific variations and additions, which do not change their intended usage and that procurement documentation, be compiled and formatted in a uniform manner;
- The Standard Conditions of Tender forms part of the contained Standard for Uniformity;
- The Standard Conditions of Tender imposes obligations on the tenderer and requires employers to conduct the process of offer and acceptance in terms of a set of standard procedures;
- The standard for uniformity establishes a number of generic procurement procedures and requires that all suppliers and services providers relating to the construction industry be solicited by accordance with standard methods and within certain parameters;
- The standard for uniformity must be applied by all organs of state that solicit tender offers in the construction industry, and promotes a culture of consistency and predictability within procurement processes through the adoption of uniform procurement documentation, procedures and practices, and
- Accounting officers for organs of state must meet the requirements of the Standard in the development of their procurement systems and associated contract documents.

Accelerated delivery in infrastructure is driven by increasing levels of investment, but is currently impeded by inadequate delivery systems and capacity within the public sector. The government of South Africa is committed to increasing levels of infrastructure investment and

the public sector accounts for approximately 40% of the country's annual investment. Government's ability to realise this expenditure is impacted heavily by current delivery capacity in the public sector.

The Infrastructure Delivery Management Toolkit has been developed through collaboration between National Treasury and the cidb as the basis for consistent and improved public sector infrastructure delivery. It provides a systematic approach to infrastructure delivery covering the full cycle from needs identification, planning and budgeting through to procurement, construction, handover and maintenance. It also provides appropriate procedures and guidelines for delivery managers in the public sector by linking them to relevant policy, legislation and regulation that underpin the planned implementation of government's infrastructure.

2.10.3 RATIONAL FOR CONTRACTOR DEVELOPMENT

Egbeonu (2006: 3) elaborates on the rational for contractor development whereby emerging contractors are to be developed with special support in terms of access to finance, training and mentoring. This will generate employment and lead to redistribution of wealth, and reform the white domination of well-established contractors in the industry. Many programmes were initiated with based on these expectations, but did fail to achieve the objectives.

Egbeonu (2006: 4) cites various authors: Mccutcheon (1979); Miles (1980); Austen and Neale (1984); Austen and Miles (1987); Ofori (1991); Kwesiga (1996); Croswell and McCutcheon (2001); Mphahlele (2001), and Watermeyer *et al.* (2001), who argue that the greatest contributing factors to the non-achievement of the above objectives over the last 30 years are attributed to:

- Inadequate selection process and categorisation;
- Lack of proper training;
- Lack of technical, financial, contractual, management and entrepreneurial skills and abilities;
- Lack of pricing, tendering, contract documentation skills;
- Lack of adequate finance and access to credit;
- Late payment; lack of continuous work;
- Poor mentoring;
- Fronting;
- Extravagant expenditure and get-rich-quick mentality, and

- No exit strategy from training programmes.

The expected outcomes from the various government development programmes dating back to 2004, according to Egbeonu (2006: 6) included, *inter alia*:

- Black contractors involved in the performance of contracts valued between R2m and R65m;
- An adequate training programme that addresses contractors' needs with good results;
- An effective mentorship programmes that fast-tracks contractor development;
- Strong and viable joint-venture entities formed amongst black contractors in order to pull resources together to perform large-scale contracts at competitive scales, and
- Transfer of skills; more employment opportunities; genuine wealth redistribution.

However, the actual outcomes according to Egbeonu (2006: 7) include:

- Very few black contracts won projects of R2M and above;
- Most stand-alone black contractors failed on R5M projects;
- Joint ventures fraught with fronting;
- Financiers refused to give adequate financial support to the black contractors;
- Competent technical and managerial skills are not being developed among contractors, and
- Mentorship was seen as a meddler instead of necessary adviser.

Egbeonu (2006: 11-12) argues that the government intended to develop successful contractors, but they did not say they will do so using factors that contribute to success of established contractors although the same factors should be useful in developing emerging contractors. An advantage would be that both the emerging and established contractors work in same industry, deal with same professionals and managed with the same procedures.

Egbeonu (2006: 14) suggests that success should be measured in the following context where success would mean completing projects to the satisfaction of the client; resolving and engaging in projects conflict while performing other projects; having performed projects valued R0.5M-R20M through the 1st five years without collapse. Egbeonu also adds that a 5-year benchmark is based on the belief that a contractor that survives through this period on this project range would have reasonably mastered contracting, and any failure after then would have been because of industry and external factors. This does not mean being able to undertake projects of all kinds. An essential part of success is that a contractor should know the types of projects that suits their capacity in order to minimise failure.

Egbeonu (2006: 16-17) illustrates in Table 2.23 the comparison of practices and problems experienced in practice in programmes and the success factor in order to see where and how things are done differently in similar situations by the two groups of emerging versus established small and medium contractors (SMCs).

Table 2.21: The practices and problems versus factors that contribute to the success of established small and medium contractors in South Africa (Egbeonu, 2006: 16-17) - Part 1

Practices and problems (DPW 2000; CIDB, 2004; DPW,CIDB,CETA,2005)	Factors that contribute to the successes of established SMCs in South Africa
<ul style="list-style-type: none"> • Advert calls people; difficult to select those with proper drive, passion ability. 	<ul style="list-style-type: none"> • Passion to achieve; self-driven to branch out into contracting.
<ul style="list-style-type: none"> • Qualifications: Metric or less; Technical, management, entrepreneurial skills and ability not prerequisite. 	<ul style="list-style-type: none"> • Few Metric; most diploma or degree in construction fields; 5-10 years' experience on technical and management work.
<ul style="list-style-type: none"> • Short training in-between projects; time, content, trainers not suitable. 	<ul style="list-style-type: none"> • Already have diploma or degree coupled with adequate work experience.
<ul style="list-style-type: none"> • Cidb grades; getting project without the capacity is still possible. 	<ul style="list-style-type: none"> • Qualifications, skills, resources, experience; they determine their entry levels.
<ul style="list-style-type: none"> • Do not understand complexity and risk in contracts; are not properly informed. 	<ul style="list-style-type: none"> • Qualifications, skills, resources, experience equips them with the knowledge.
<ul style="list-style-type: none"> • Lack skill for viable project; no programme for cost/price control. 	<ul style="list-style-type: none"> • Experienced QS, estimator; computer programme; past and present cost trends.
<ul style="list-style-type: none"> • Lack own finance; borrow on high cost that make project unprofitable. 	<ul style="list-style-type: none"> • Own ready capital; build it up; borrow with small interest when needed.
<ul style="list-style-type: none"> • Most take big projects they lack its capacity; fail accordingly. 	<ul style="list-style-type: none"> • Skills and staff; 25-30% ready capital before taking a project.
<ul style="list-style-type: none"> • Consider staff costly, do not employ; cheap labour, doing on their own; fail. 	<ul style="list-style-type: none"> • Employ adequately; network with subcontractors; skill and semiskilled workers.

Table 2.21- Part 2

<ul style="list-style-type: none"> • Lack project resource programming skills; not allowed front-load; late payment. 	<ul style="list-style-type: none"> • Monthly programme of project and resources; front load for cash flow; timely payment.
<ul style="list-style-type: none"> • Do not understand contract terms and procedures; not trained adequately. 	<ul style="list-style-type: none"> • They understand terms and deal with clients accordingly.
<ul style="list-style-type: none"> • Deemed incapable; PA instructs unduly; cant/fear to apply procedures. 	<ul style="list-style-type: none"> • Relate with PA; specifications; apply demand for specific performance procedures.
<ul style="list-style-type: none"> • Profit is rare or 2%. 	<ul style="list-style-type: none"> • Target 15%; actual / allowable cost control programmes help realise profit.
<ul style="list-style-type: none"> • Do not plough back profit; always want project money; no stability plan. 	<ul style="list-style-type: none"> • 60-100% profit plough back for asset and capital; 5-year stability plans.
<ul style="list-style-type: none"> • Enter joint ventures without required capacity; becomes front; no transfer of skills. 	<ul style="list-style-type: none"> • JV on available own capacity; not fronting; learn on their own.
<ul style="list-style-type: none"> • Lack ability to get continuous work. 	<ul style="list-style-type: none"> • With capacity, they can move beyond their regions to get continuous work.
<ul style="list-style-type: none"> • Hard to get active retired professionals as mentors; executive mentor problems. 	<ul style="list-style-type: none"> • With own capacity they do not really need mentors; they may seek advice.

Table 2.21 illustrates how practices and problems in the programmes differ from how established SMCs achieve success in similar situation. It suggests that the programmes are not properly formulated and implemented. However, Egbeonu (2006: 16-17) argues that very few black SMCs are making a success by applying the success factors. As the programmes intend to develop successful contractors, it seems appropriate that they incorporate the factors that contribute to the success of established SMCs. This seems logical, as both emerging and established SMCs work in the same industry, use the same contract procurement systems, performance and acceptance procedures, and deal with the same professionals and role players (Egbeonu, 2006: 18). The factors that contribute to success are deemed to be useful to both groups of SMCs in South Africa.

The cidb advocates the main reasons for contractors to register is that “registration also prevents ‘casual’ players from undermining the performance and reputation of the emerging sector. Some of these casual players win contracts by under-pricing. They then subcontract to the real players.

This is not building sustainable growth and empowerment and many of these projects fail. The Register will enable real contractors to tender more successfully and to win more contracts. This ensures sustainable empowerment and real growth of contractors and industry.”

Some of the main flaws in the system are the fact that contractors, and consultants who apply for registration or upgrading their status, are only being audited on their financial statements. No physical inspections of previous work are done, nor are any references confirmed. Furthermore, the contractors’ performance are only assessed once the project is completed on cost, time, and quality whereby by way of indicating ‘yes’ or ‘no’ when updating the cidb register to confirm completion of the project.

This effectively means that contractors can obtain a higher cidb grading purely based on their turnover. The result in practice is that there are a large number of contractors in the industry that are over graded, i.e. not capable of completing projects for which they obtained cidb grading which inevitably leads to project failure and major client dissatisfaction. The consequence is that there has been very little change to Egbeonu’s findings (2006: 16-17), six years after the fact. In fact it may have worsened. Taking cognisance of the ever-decreasing availability of suitably qualified construction personnel and artisans, the South African construction industry is now officially entering the dark ages of quality assurance where project success is something out of the ordinary in terms of quality.

2.11 CONCLUSIONS

It is notable from the literature reviewed in the chapter that project management is systemic in nature that operates in a very complex environment where there are multiple encumbering factors. A successful project could be defined as having achieved the project objectives of being within the cost and time parameters of the project, at the desired performance and quality level including full compliance with health and safety regulations, attainment of social objectives, and lessons learnt are shared and heeded. All while monitoring and evaluating projects, utilising the assigned resources effectively and efficiently, facilitated by the project management and support offices through organisational learning, and most importantly, the end product is functional and accepted by the client.

To attain client satisfaction, the project brief should clearly define the objectives, scope and the overall schedule of activities for the project i.e. a project plan, and project organisation and communication. The brief should also clearly define project control, procedures to check and confirm quality review standards, usage of resources, project budget and time constraints as well as managing change and tracking issues. The client has a major contribution toward achieving project success. This necessitates a willingness of the client to co-ordinate efforts amongst their own divisions in the service delivery process by reporting maintenance requirements timely, and setting specific goals, and criteria during project programming. The client must also maintain a well-established procedure for changes to the project programmes or individual projects to avoid delays in project implementation or approval of variation orders, which could adversely affect the allocated resources and project completion. Sufficient authority must be provided to the client representatives for taking decisions on site, not to refer minor issues to their head office for decisions, which cause further delays. This can be facilitated by prompt and accurate communications, and minimising 'red' tape.

Managing construction projects in today's turbulent environment within the South African construction industry is a daunting and mammoth task bestowed on any project manager. Various authors have found that the establishment of PMOs or PSOs is a very effective way of creating change and improving on delivery of projects. The level of project management maturity achieved by the performing organisation, generally determines the range of services that a PMO / PSO needs to provide to raise maturity, to create the necessary change, and affect organisational learning and improvement.

The contractors' and consultants' contribution toward project success and failure as well as fraud and corruption has not been fully dealt with in the literature review as it is not the focus point of this research. However, cognisance must be taken of the fact that it is the responsibility of the NDPW, as the project implementing agent, to acquire the services of suitably qualified and competent contractors and consultants for government projects that is governed by the interpretation and implementation of the procurement policies.

The next chapter, Chapter 3 elaborates on the research methodology used in this research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research methodology refers to the procedures and methods used in the research study to collect and analyse data. The methodology dictates the particular tools the researcher has to select to carry out the research.

This study explores the use of system thinking in a multi-methodological approach to improve project implementation and service delivery within the NDPW to ensure project success and building organisational competencies. A multi-methodological approach, also referred to as a mixed method research design, was adopted to identify and assess the problem and to make recommendations for improvement facilitated by system thinking and a number of other methodological techniques as depicted in Figure 3.1.

3.2 WHY A MIXED METHODS RESEARCH DESIGN?

Leedy and Ormrod (2010: 2) describe research as being “a systematic process of collecting, analysing, and interpreting data in order to increase our understanding of a phenomenon about which we are interested or concerned where we focus on formal research, research in which the in tension is to understand a phenomenon and expect to communicate what we discover to the larger scientific community.” Leedy and Ormrod (2010: 2) further describe methodology as the logic of implementing methods in the study of reality within the research cycle, starting where the researcher has an unanswered question to a problem situation. The unanswered question is then developed into a clear problem statement and articulated goal. A specific plan for proceeding is developed upon which the principal problem is subdivided even further into sub-problems or sub-questions whereby the research is guided by the specific research problem, question, or hypothesis as presented in Chapter 1.

Leedy and Ormrod (2010: 3) also advocate that certain critical assumptions are accepted upon which the researcher then seeks facts within the environment that gave rise to the problem. To complete the research cycle, the collected data is then organised, analysed and interpreted, which leads to the solving of the problem. Research, by its nature, is cyclical or, more exactly, helical.

3.2.1 THE NATURE OF QUALITATIVE RESEARCH

The qualitative research approach places emphasis on describing and understanding the nature of the phenomena, and the result is tentative answers or hypotheses about what has been observed. Creswell *et al.* (2011: 4) argue that the salient strength of qualitative research is its focus on the contexts and meaning of human lives and experiences for the purpose of inductive or theory-development driven research. It is a systematic and rigorous form of inquiry that uses methods of data collection such as in-depth interviews, ethnographic observation, and review of documents. Qualitative data helps researchers understand processes, especially those that emerge over time, provide detailed information about setting or context, and emphasise the voices of participants through quotes. Qualitative methods facilitate the collection of data when measures do not exist and provide a depth of understanding of concepts. Typical qualitative approaches used in research are case studies, grounded theory, ethnography, and phenomenology.

3.2.2 THE NATURE OF QUANTITATIVE RESEARCH

Quantitative research is a mode of inquiry used often for deductive research, when the goal is to test theories or hypotheses, gather descriptive information, or examine relationships among variables. These variables are measured and yield numeric data that can be analysed statistically according to Creswell *et al.* (2011: 4). Quantitative research may be described in general terms as that approach to research in the social sciences, which is more highly formalised, that is more explicitly controlled within a range, that is more exactly defined in terms of the methods used, and is relatively close to the physical sciences. It seeks to quantify human behaviour through numbers and observations. The emphasis is on precise measurement, the testing of hypotheses based on a sample of observations and a statistical analysis of the data recorded.

Quantitative data have the potential to provide measurable evidence, to help to establish probable cause and effect, to yield efficient data collection procedures, to create the possibility of replication and generalisation to a population, to facilitate the comparison of groups, and to provide insight into a breadth of experiences.

3.2.3 MIXED METHODS RESEARCH STRATEGY AND APPROACH

A research approach refers to an integrated set of research principles and general procedural guidelines. Approaches are broad, holistic, but general methodological guides or roadmaps that are associated with particular research motives or analytic interests. Two examples of analytic interests are population frequency distributions and prediction. Examples of research approaches include experiments, surveys, correlational studies, ethnographic research, and phenomenological inquiry. Each approach is ideally suited to addressing a particular analytic interest. For instance, experiments are ideally suited to addressing explanations or probable cause; surveys - population frequency descriptions, correlations studies - predictions; ethnography - descriptions and interpretations of cultural processes, and phenomenology - descriptions of the essence of phenomena or lived experiences.

Mixed methods research, according to Creswell *et al.* (2011: 5), is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves the philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process. As a method, it focuses on collecting, analysing, and mixing both quantitative and qualitative data in a single study or series of studies. Creswell *et al.* (2011: 5) state that mixed methods researchers, believe that “the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone.”

One common purpose of using a mixed methods approach is to facilitate the richness of data and to expand the interpretation of the findings. Whether quantitative or qualitative, most methods have inherent weaknesses and / or biases that limit their usefulness and potentially skew the interpretation of the results. However, Creswell *et al.* (2011: 06) argue that by utilising a mixed methods approach in which the different quantitative / qualitative methods complement each other's strengths and weaknesses, these biases can be equalised, resulting in an improved solution that better explains the problem under study. This use of dissimilar methods in mixed methods studies is deliberate so as to balance out the weaknesses of each individual method with the strengths of their counterparts. For example, a mixed methods study may incorporate quantitative methods that are typically free of personal bias, but do not adequately describe the context surrounding the subjects. On the other hand, personal bias is inherent in most qualitative methods, but these methods effectively provide a forum for the subjects to voice their concerns or opinions. Thus, used together, the mixed methods design can incorporate the strengths of the quantitative method with the strengths of the qualitative method to provide a more comprehensive explanation of the problem.

Moon and Moon (2004: 1-8) state that research that is based on a mixed methods methodology has often not been regarded as equal in status to that based on a single methodology within the traditional spectrum of philosophical perspectives. A mixed methods research design according to Creswell and Plano Clark (2007: 40), incorporates and integrates both qualitative i.e., open-ended analyses, and quantitative i.e., closed-ended analyses methods of social inquiry that are based on specific philosophical assumptions that also include diverse methods for gathering and analysing data and interpreting and reporting results. Developed over the last 50 years, this unique approach has increased in popularity among social scientists since it allows for a more complete and comprehensive analysis of the problem under study than either a quantitative or qualitative design can alone (Singleton and Straits, 2005; Creswell and Plano Clark, 2007; Greene, 2007). Greene described this approach as a mixed methods way of thinking which consist of looking at the world in multiple ways in order to make sense of a problem or phenomenon.

Thus, more than just a different way of analysing data, the mixed methods way of thinking represents a paradigm shift for most researchers. Thinking outside of the typical quantitative / qualitative box, researchers acting within this new paradigm, according to Creswell and Plano Clark (2007: 40), assume that there are multiple approaches to social inquiry, agree that those approaches are legitimate yet partial and recognise that this way of thinking is open, generating new questions in an effort to better understand complex social issues. Creswell and Plano Clark (2007: 40) also acknowledges and respects the differences and diversity among the multiple models, and convergence through triangulation of multiple methods as an important component of the mixed methods model.

Creswell *et al.* (2011: 4) define mixed methods research as a research approach or multi-methodology that:

- Focuses on research questions that call for real-life contextual understandings, multi-level perspectives, and cultural influences;
- Employs rigorous quantitative research assessing magnitude and frequency of constructs and rigorous qualitative research exploring the meaning and understanding of constructs;
- Intentionally integrates or combines these methods to draw on the strengths of each;
- Utilises multiple methods e.g., intervention trials and in-depth interviews, and
- Frame the investigation within philosophical and theoretical positions.

3.2.4 COMBINING QUANTITATIVE AND QUALITATIVE DATA

Mixed methods research begins with the assumption that investigators, in understanding the social and health worlds, gather evidence based on the nature of the question and theoretical orientation. Social inquiry is targeted toward various sources and many levels that influence a given problem e.g., policies, organisations, family, individual. Creswell *et al.* (2011: 5) are of the opinion that quantitative methods are ideal for measuring pervasiveness of ‘known’ phenomena and central patterns of association, including inferences of causality. Qualitative methods allow for identification of previously unknown processes, explanations of why and how phenomena occur, and the range of their effects according to Pasick *et al.* (2009: 11-35). Mixed methods research, then, is more than simply collecting qualitative data from interviews, or collecting multiple forms of qualitative evidence e.g., observations and interviews, or multiple types of quantitative evidence e.g., surveys and diagnostic tests. It involves the intentional collection of both quantitative and qualitative data and the combination of the strengths of each to answer research questions.

3.2.5 THE INTEGRATION OF MULTIPLE FORMS OF DATA

In mixed methods studies, investigators intentionally integrate or combine quantitative and qualitative data rather than keeping them separate. The basic concept is that integration of quantitative and qualitative data maximises the strengths and minimises the weaknesses of each type of data. This idea of integration separates current views of mixed methods from older perspectives in which investigators collected both forms of data, but kept them separate or casually combined them rather than using systematic integrative procedures. One of the most difficult challenges is how to integrate different forms of data. Three approaches are advocated by Creswell *et al.* (2011: 5-6):

- Merging data. This integration consists of combining the qualitative data in the form of texts or images with the quantitative data in the form of numeric information. This integration can be achieved by reporting results together in a discussion section of a study, such as reporting first the quantitative statistical results followed by qualitative quotes or themes that support or refute the quantitative results. It can also be achieved by transforming one dataset according to Sandelowski *et al.* (2009), e.g. counting the occurrence of themes in a qualitative dataset so that the transformed qualitative results can be compared with the quantitative dataset. This integration also can occur through

the use of tables or figures that display both the quantitative and the qualitative results. Merging indicates that the quantitative and qualitative studies are performed together and the results of each are then merged together to explain the study phenomenon;

- **Connecting data.** This integration involves analysing one dataset e.g., a quantitative survey, and then using the information to inform the subsequent data collection e.g., interview questions, identification of participants to interview. In this way the integration occurs by connecting the analysis of results from the initial phase with the data collection from the second phase of research. Connecting the data results in a sequence of events, that is, the results of the first method are examined before conducting the second method. In this way, the second method builds on the findings of the first method, and
- **Embedding data.** In this form of integration, a dataset of secondary priority is embedded within a larger, primary design. An example is the collection of supplemental qualitative data about how participants are experiencing an intervention during an experimental trial. Alternatively, a qualitative data collection may precede an experimental trial to inform development of procedures or follow an experimental trial to help explain the results of the trial. Embedding implies that one method is primary and the secondary method simply provides additional supporting evidence.

The mixed methods design is a combination of these two processes as shown in Table 3.1.

Table 3.1: The mixing of methods in a mixed methods design (Creswell *et al.*, 2011: 40–41)

Approaches to obtaining data	Single phase method	Multiple phase method
Merging	Quantity + Quantity	Quantity + Quantity + Quantity +...
Connecting	Quantity → Quality	Quantity → Quality → Quantity →...
	Quality → Quantity	Quality → Quantity → Quality →...
Embedding	Quantity (quality)	Quantity (quality (quantity (...)))
	Quality (quantity)	Quality (quantity (quality (...)))

Quantity represents quantitative methods while quality represents qualitative methods; + indicates methods occur concurrently; → indicates methods occur sequentially; ‘ ’ indicates embedded methods. Uppercase indicates the primary or dominate method.

In addition to this, Creswell *et al.* (2011: 40 – 41) argue that mixed methods studies may be performed in a single phase in which both the quantitative and qualitative components are completed together in one study with one set of results or in multiple phases in which the quantitative and qualitative components are completed in separate studies with their own results.

3.2.6 ADVANTAGES AND CHALLENGES IN USING MIXED METHODS

Gil-Garcia and Pardo (2006: 1-7) confirm that multi-method or mixed method approaches are a recurrent topic of debate in academia. Scholars from different disciplines recommend the use of multiple methods to study complex social phenomena according to Brewer and Hunter (1989); Creswell (2003) and Newman and Benz (1998). Gil-Garcia and Pardo (2006: 5) present several reasons for using a combination of research methods, but noted that such multi-method work is relatively scarce in the literature.

Gil-Garcia and Pardo (2006: 5) list four major advantages of the multi-method research approach:

- It is a more comprehensive approach to the phenomenon - Multi-method approaches help to obtain full answers and increase the robustness of understanding. Mingers (2001: 241) argues that “different research methods, especially from different paradigms, focus on different aspects of reality and a richer understanding of a research topic will be gained by combining several methods together in a single piece of research or research programme.” Using multiple methods has the potential of gaining knowledge about different aspects of a phenomenon under study, and an overall better and more complete explanation;
- Facilitates triangulation of the results – Tashakkori and Teddlie (1998), Hammond (2005); and Sammons *et al.* (2005) state that validating interpretations of what is happening in a particular environment is considered a key advantage of multi-method studies. Harden and Thomas (2005) argue that triangulation of results can be useful not only at the single study level, but also at the meta-analysis or review level;
- A broader set of questions can be asked – Tashakkori and Teddlie (1998) state that researchers can expand their scope of study and take into consideration other aspects of the phenomenon. Plewis and Mason (2005), and Sammons *et al.* (2005) affirms that researchers can also enrich their understanding of specific situations by having the analytical power of quantitative and qualitative research methods, and
- Enable discovery - Discovering new or paradoxical factors that could foster future research (Hoyles *et al.*, 2005; Tashakkori and Teddlie, 1998) might be considered the capstone

advantage. The opportunity to discover paradoxes, to discover and confirm unexpected outcomes may be the tipping point that drives teams to undertake the cost and complexity of multi-method approaches.

However, Gil-Garcia and Pardo (2006: 6) also remind researchers of the challenges associated with the implementation of multi-method research approaches:

- Cost of multi-method studies - Conducting research is an endeavour that demands great amounts of time and resources. As a general rule, according to Blatchford (2005) using multiple methods requires more resources and / or the prioritisation of methods and research questions. It is also important to think about the kind of resources that need to be available to teach future researchers. The goals and the cost of any particular study – both in the training arena and in the design of a particular research protocol are important;
- Publication pressures, reputation and tenure - Mingers (2001) asserts “academics are increasingly under publication pressures and it is certainly much easier to sell clear-cut, well-defined, mono-method work both to funding agencies and to journals.” Dawes *et al.* (2004) state that in the case of digital government, for example, sometimes researchers need to disaggregate their inter-disciplinary research into disciplinary pieces in order to publish their results;
- Availability of multi-method research knowledge - Some disciplines are inherently interdisciplinary and have been doing multiple method research and integrating results for many years, for example, in geography. It seems clear that it is necessary to train people to think more broadly about research, and
- Incompatibility between methods - As discussed above, some multi-method approaches systematically combine quantitative and qualitative methods. Reichardt and Cook (1979) argue that in some situations this combination presents challenges derived from the perceived differences between these two types of methods. Brannen (2005) states that other researchers consider that qualitative and quantitative approaches are compatible and that they complement each other.

According to Moon and Moon (2004: 10), there are three commonly used research designs for exploratory studies, also known as descriptive studies:

- Exploratory investigation, quantitative data and operations, statistical analysis and inference;
- Exploratory investigation, qualitative data and operations, statistical analysis and inference, and

- Exploratory investigation, quantitative data and operations, qualitative analysis and inference.

In addressing the mixed methods approach to social inquiry, Creswell *et al.* (2011: 12) highlight the following advantages and disadvantages. The advantages of using a mixed methods approach include: the ability to choose from among all the quantitative and qualitative tools in order to perform a comprehensive study of the research problem; the ability to answer more in-depth research questions; the ability to collaborate with researchers in other disciplines; the ability to incorporate more than one worldview in order to provide the most inclusive explanation of the problem, and the ability to combine both inductive and deductive reasoning.

In addition to these, Connelly (2009: 31) and Creswell *et al.* (2011: 13-17), suggest that an advantage of a mixed methods design lies in added meaning that is, qualitative data can add meaning to quantitative numbers while quantitative numbers can add meaning to qualitative data. The challenges or disadvantages of using a mixed methods approach include: more resources such as finance, people and time are needed to implement the study and collect the data; mixed methods research can be complicated to perform and difficult to sort out the results, and researchers must be skilled in both quantitative and qualitative techniques. Another disadvantage to mixed methods studies according to Connelly (2009: 32), is that researchers may not clearly describe or even understand how the different data were combined or integrated. In addition, if the researcher decides to publish the quantitative and qualitative components separately, it may be unclear to the reader that each study was actually a component of a mixed methods design.

Collier and Elman (2008: 783) summarise the concept of multi-methodology that can be understood as encompassing three different meanings: the heterogeneity of qualitative methods, the interconnections between qualitative and quantitative research procedures, and the relationship with interpretative and constructivist methods. Notwithstanding the diverse character of these several approaches, ultimately the approaches are all anchored in the thick analysis of cases that is distinctively associated with qualitative work.

3.2.7 TRIANGULATION

Creswell *et al.* (2011: 61-62) argue that the goal of triangulation is to converge the different data sets in such a way as to obtain an answer to the research question concerning the problem under study thereby increasing its validity. The use of multiple strategies to improve construct validity,

a form of methodological triangulation, is now routinely advocated by most methodologists. In short, mixing or integrating research strategies in any and all research undertaking is now considered a common feature of all good research.

Specifically, the problem with relying on just one method is to do with bias. There are several types of bias encountered in research according to Kennedy (2009: 2), particularly the qualitative design research where triangulation can help with most of them:

3.2.7.1 Measurement bias

Measurement bias is caused by the way in which data is collected. Probably the most common form of this is the effect of the setting in which the research is conducted, for example, peer pressure on focus group participants. Triangulation facilitates combining individual and group research methods to help reduce this bias. Related to this are response biases in which participants tend to tell the researcher what the researcher wants to hear. Again, a triangulated approach means self-reported and observational research methods can be combined to help balance out the problem.

3.2.7.2 Sampling bias

Sampling bias can be omission or inclusion in nature. Omission bias is when the entire population is not included in the study, and inclusion bias is when only some parts are included because it is more convenient to do so. Some research methods make it easier to include certain parts of the population, for example using phone interviews for interstate participants can be a good substitute for face-to-face interviews with local participants. Similarly, online surveys or cultural probes might make it easier to include geographically distant participants. Triangulation combines the different strengths of these methods to achieve sufficient coverage.

3.2.7.3 Procedural bias

Procedural bias occurs when participants are pressured to provide information which might catch them unaware and thus affect their answers. Similarly, an online exit survey might make the participant rush their responses to finish the survey quickly. Triangulation allows the researcher to combine short engagements with longer engagements where participants have more time to give deliberate responses.

Bias or preconceptions, according to Kennedy (2009: 2), can never be ruled out and cautions researchers to be cognisant of their presence and potential impact. In fact, failing to recognise bias is itself known as design bias, which also includes failing to disclose assumptions and possible bias when reporting the findings. Particularly with qualitative research, it is considered best practice to acknowledge bias and preconceptions. This is what Anthropologists and social scientists refer to as reflexivity.

In this regard, a bit of navel gazing is very important; self-reflection and awareness of the limitations of the proposed methods to help assess possible bias and take them into account when analysing data.

Cohen and Manion (2000: 254) define triangulation as an “attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint.” According to O’Donoghue and Punch (2003: 78), triangulation is a “method of cross-checking data from multiple sources to search for regularities in the research data.” Altrichter *et al.* (2007: 147) contend that triangulation “gives a more detailed and balanced picture of the situation.” Bogdan and Biklen (2006: 36) argue that triangulation is a powerful technique that facilitates validation of data through cross verification from more than two sources. In particular, it refers to the application and combination of several research methodologies in the study of the same phenomenon:

- It can be employed in both quantitative –validation, and qualitative - inquiry studies;
- It is a method-appropriate strategy of founding the credibility of qualitative analyses;
- It becomes an alternative to traditional criteria such as reliability and validity, and
- It is the preferred line in the social sciences.

By combining multiple observers, theories, methods, and empirical materials, researchers can hope to overcome the weakness or intrinsic biases and the problems that come from single method, single-observer and single-theory studies. It is often said that any research is better than no research, and largely this is true, but limitations such as bias of certain methods must be taken into account according to Kennedy (2009: 10). Triangulation is a very useful means of capturing more detail, but also a way of minimising the effects of bias and ensuring a balanced research study, no matter how big or small that study may be.

Triangulation in this research included:

- Observing and analysing both present and archive data;

- Interviews either face-to-face or telephonic;
- Focus group workshops, intervention meetings and feedback sessions;
- Secondary research including an examination of research data;
- Quantitative survey to help validate findings with a much larger sample size, and
- Usability testing of existing or early concepts by means of intervention trials.

3.3 APPROACH TO THIS RESEARCH

Empirical publications such as Averweg (2011: 376), Bryman (2006: 105), Creswell *et al.* (2011: 23) and Greene *et al.* (1989: 259) provided the basis for the multi-methodical research methodology whereby the research perspective must embrace a set of fundamental commitments:

- Critical awareness – examining and re-examining taken-for-granted assumptions along with the conditions that give rise to them;
- Emancipation – ensuring that research is focused on improvement, defined temporarily and locally, taking issues of power into account, and
- Methodological pluralism – using a variety of research methods in a theoretically coherent manner, becoming aware of their strengths and weaknesses, to address a corresponding variety of issues.

Action research as part of a multi-methodological research was adopted in this research to provide a systematic approach to study the issues or problems in an organisational setting. In this instance the research is located within a real-life social and work-based organisational community that provides tangible meaning rather than in a hypothetical or devised scenario as the focus is on real-life research and a reflection on real-life practical and pragmatic activities within an existing organisation. The problem statement necessitated the development of multiple perspectives and a complete understanding about the problem statement. By including qualitative research in mixed methods, created the opportunity to study new questions and initiatives, complex phenomena, hard-to-measure constructs, and interactions in specific, everyday settings, in addition to experimental settings.

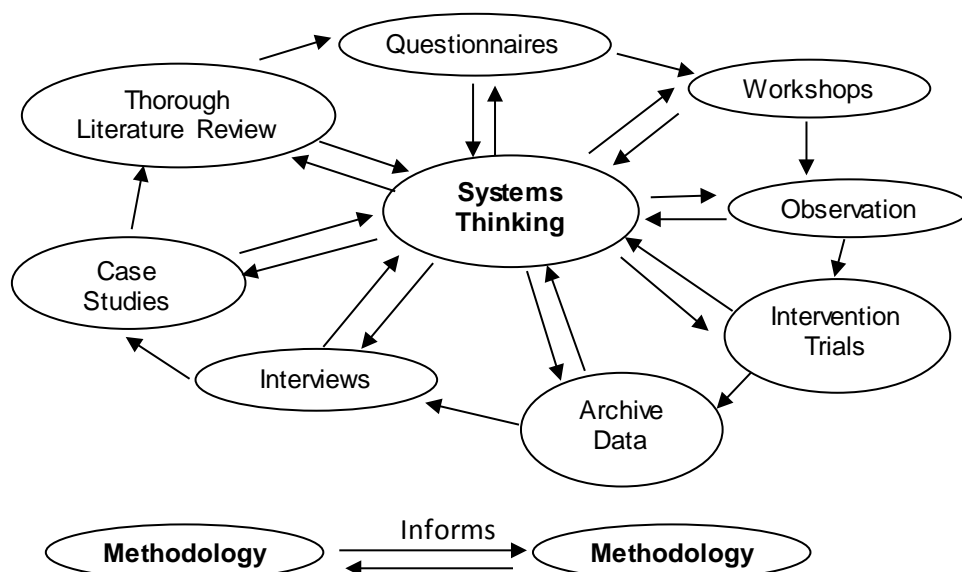
More reasons for using a multi-mythological approach in this instance are to view problems from multiple perspectives to improve and enrich the meaning of a singular perspective. To contextualise information, to take a macro picture of a system such as the NDPW's project

implementation processes, and add in information about individuals working at different levels in organisation.

Other reasons include merging quantitative and qualitative data to develop a more complete understanding of a problem; to develop a complementary picture; to compare, validate, or triangulate results; to provide illustrations of context for trends; or to examine processes and experiences along with outcomes. Another reason is to have one database build on another. When a quantitative phase follows a qualitative phase, the initial research, the intent is to develop a survey instrument, an intervention, or a programme informed by qualitative findings.

This research was initiated in May 2006 by observing the present situation, reviewing and analysing both the present and the archive data retrieved from project files and electronic systems, and interpreting construction programme management reports and results. This informed the design of the interviews with key stakeholders within the project implementation and service delivery process to understand the complexities of implementing projects and contributing factors to project failure. Information gathered from the interviews identified case studies and more archive data of previous and present projects that lead to trial interventions. Interventions trials that emanated from workshops and management meetings were implemented, monitored and evaluated. Information gained from the case studies and trial interventions informed further interviews and workshops. The multi-methodological approach is illustrated in Figure 3.1.

Figure 3.1: Multi-methodological approach: Inter-relations cycle



All the major causes of delays within the project implementation cycle were identified and analysed (Appendix E). Information gathered from the latter led to a thorough literature review, all of which culminated into the primary research questionnaire (Appendix C). Information gathered from the questionnaire informed the continued cycle through interviews, observations and trial interventions. All seven methodologies informed the system thinking methodology, the output of which fed back into the use of those methodologies and assisted in understanding the problem situation and deriving recommendations for improvement.

In the process, system thinking was used to generate a better understanding of the situation, which was facilitated by workshops and brainstorming exercises, using rich pictures and causal loop diagrams to determine the root cause(s) of the perceived project implementation and service delivery problems, and to make recommendations for improving the present situation. The latter process resulted in follow-up interviews and discussions up to the point where a consolidated questionnaire could be compiled for conducting the primary research.

The literature review and action research commenced in January 2007. The pilot survey took approximately two weeks (2011/07/27 to 2011/08/09), the primary survey took approximately eleven weeks (2011/08/10 to 2011/10/23), and the statistical data analysis of the primary survey was completed in 26 February 2012. The testing of the PSO model and project evaluation framework took four weeks (2012/09/21 to 2012/10/14).

The interrelationships of the distinct, but complementary methodology techniques that were used are illustrated in Figure 3.1. This was to simplify the processes of enquiry while considering the organisational processes, design, culture and politics as well as time limitations of the respective stakeholders. The underlying reason also for using a multi-methodological approach was to eliminate all sorts of power play, manipulation and fear. The use of a multi-methodological approach also ensured full participation and taking ‘ownership’ of the process that would also facilitate managing the emanating change initiatives from recommendations of this research.

3.3.1 VALIDITY OF THE APPLICATION OF SYSTEM THINKING

Flood (2007: 13) states that the applied system thinking methodology is an intervention that begins with problem identification and concludes with some final solution, with an expectation that actions will attain a desirable condition or outcome. The challenge, according to Simon-Solomon (2009: 2), is to find the most efficient means to get to this desired end. Action research

has been closely linked to systems theory from its inception although Susman and Roger (1978) made the earliest connections. As seen in the characteristics of action research, systems development is one of its key goals. Action research identifies that human action is systematic and that action researchers are intervening in social systems. Peter Checkland's extensive use of action research in the methodology of systems development at Lancaster University is a landmark for the system thinking methodology in information systems research (Checkland, 2008: 2). Simon-Solomon (2009: 3) summarises the following reasons as to how and why action research was conducted in this research:

- Action research aims to improve understanding of an immediate, complex social system. The project implementation domain is both complex and multivariate in nature;
- Action research simultaneously assists in practical problem solving and expands scientific knowledge. This helps both the PMs and the NDPW, as the implementing agency, through intervention and research by providing knowledge;
- Action research is performed collaboratively and improves the competencies of the respective actors. Action researchers do not work on research subjects, but rather with them (Schein, 2007), and
- Action research is primarily applicable for the understanding of change processes in social systems, which is a pressing issue needing research in the project implementation domain.

The domain of project implementation system action research is clearest where the human organisation interacts with project implementation itself. Simon-Solomon (2009: 4) argues that action research aims for an understanding of a complex human process rather than prescribing a universal social law. Baskerville (1999 cited by Simon-Solomon, 2009: 4) state that the ideal domain of the action research method is characterised by a social setting where:

- The researcher is actively involved and the expected benefits are for both researcher and the organisation;
- The knowledge obtained can be immediately applied, and
- The research is a process of linking theory and practice.

According to Dick and Swepson (2002: 1), the validity of any assertions that ethnography makes, depends on evidence and arguments that support the accuracy of the explanation of a complex social situation. This is usually done by interviewing a wide range of people in that situation and attempting not to interpret the data, but to allow patterns of behaviour to emerge from the interview data. The trade-off can be at the expense of comparing between groups or comparing the data with some existing theory to add to the body of knowledge about human behaviour in

general. Action research aims primarily to achieve action and understanding in one complex social situation at the same time.

Dick and Swepson (2002: 2), also affirm that action research requires different concepts of validity to meet the need for responsiveness and change. All paradigms seek to understand the world. Action research uses this understanding to inform simultaneous action. According to Dick and Swepson (2002: 3), the most important strategies that can be used to achieve validity in action research is by incorporating a cyclic process, to challenge and refine the various interpretations, and secondly, to create dialectic between the different sources of information or perspectives on them.

The validity is a function of situation and intended outcomes. As an action research methodology, system thinking pursues understanding, which can inform action and be informed by it. The use of multiple cycles allows the early conclusions of the researcher(s) to be scrutinised and refined in the later stages. As each cycle examines the topic of study from different perspectives, the biases of any one of them are more likely to be identified. Finally, implementation determines in a compelling way if the understanding can be used to improve the situation. It is this reasoning that enticed the adoption of a multi-methodological approach to this research and using system thinking as the nucleus methodology.

The system thinking approach also offered an analysis of differing perceptions and an opportunity to explore alternative conceptualisations and constructs that culminates into action generation to seek accommodation and consensus on improvements. The validity of using system thinking as a fresh approach within the NDPW's present problem situation is supported by the fact all previous attempts failed, the problem has been around long enough to have a history wherein system thinking assisted in tracking trends that are driving the problem(s). There are different views and theories regarding the cause of the problem, which exhibits a very dynamic complexity.

3.3.2 COLLECTING DATA

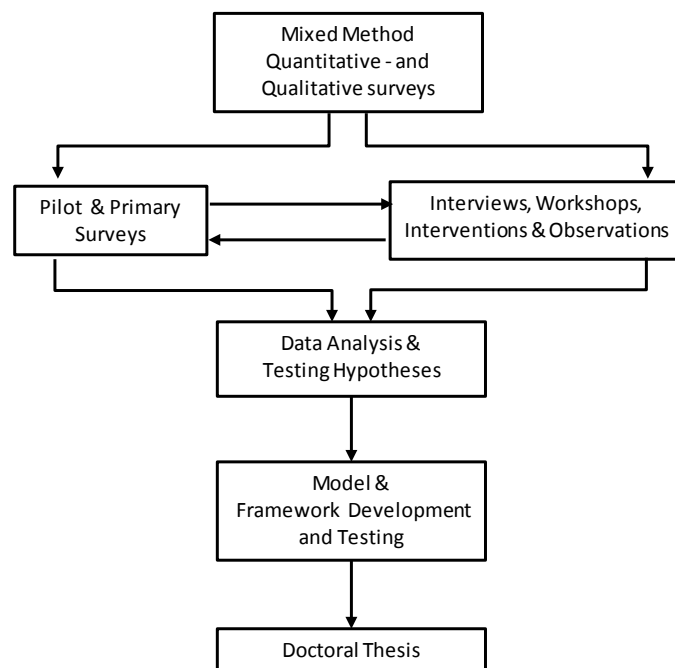
According to Mack *et al.* (2005: 2), the most common techniques used to collect data from people are participative observation, tests, interviews, informal discussions, and questionnaires. In an attempt to obtain the most reliable data, a questionnaire was compiled based on data emanating from observations, interviews and the related literature reviews, which respondents were asked to answer in order to obtain a more objective view of the present situation and to

eliminate bias influences. The questionnaire was answered on the respondents' personal computer and returned via e-mail or were hand delivered.

3.3.2.1 Survey method

The survey method used in this research was governed by the type of research and its objectives. There are mainly four survey methodologies that were used. The historical method is usually applied to data of a documentary nature and demands systematic planning for retrieving and analysing, while the descriptive survey method is used to process data that is obtained through observation and which may lie buried deep within the minds or within attitudes or reactions of people. The methodological approach to the research is illustrated in Figure 3.2.

Figure 3.2: Methodological approach to the research



The instrument for observing data beyond the physical research of the observer is the questionnaire according to Leedy (1997: 173, 191, 217 and 232), and Connaway and Powell (2010: 109–110). The analytical survey method analyses the quantitative statistical data that is concerned primarily with problems of estimation and with testing statistically based hypotheses and the experimental method is used for data derived from an experimental control situation in which two separate groups, namely control and experimental group, are involved. The descriptive method implies the assumption that what is observed at any one time is normal and should the same conditions be present in the future, it could be observed again. Both the

descriptive survey and analytical survey methods were used as the desired tool to conduct the research.

3.3.2.2 Developing the questionnaire

Four different types of questions were used in this research, factual questions - to determine the personal and socio-demographic information from respondents; questions on opinions and attitudes where the researcher uses these types of questions to probe the feelings, convictions, ideas, pre-suppositions and values related to the subject being researched; information questions that questions are used to accurately measure the information level to which respondents have been exposed, and questions on behaviour to determine awareness of a particular subject and attempt to assess the current situation. The questions were formulated from the reviewed literature, interviews, workshops, outcomes of intervention meetings and case studies pertaining to delays experienced in project implementation within the NDPW.

According to Kerlinger (1986: 441-442), questions may be asked in a closed end form or in an open end form, or a combination of both. A closed end questionnaire tests the presence or absence of a particular behaviour by presenting the respondents with a question and a fixed set of answers from which to choose. The closed end form confines the respondent to a single alternative and it is thus easier to code and classify the responses, whereas the open-ended questions enable the respondents to state their case freely and motivate their answers. Open-ended questions are used when the question is designed to find out how much the respondents know about the survey topic. Both types of questions were used in this research.

Midgley *et al.* (2007: 1) are of the opinion that a questionnaire is not the only tool needed for evaluating systemic and participative methods. Nevertheless, it can make a useful contribution by gathering the viewpoints of participants immediately after their involvement in a workshop. The questionnaire has the following sections:

- Questions gathering basic demographic data such as their position, experience, qualifications, number and average value of the NDPW projects the respondents have been involved in;
- A five-point scale for the quantitative assessment of usefulness, plus open questions about what people have experienced, liked and disliked, and what could have been done differently. Additional open questions reflecting local contingencies could also be added if and when required;

- Questions with five-point scales enabling the quantitative evaluation of whether certain standards / conditions have been achieved. Both process and short term outcome questions could be included. These questions should not be tailored to particular interventions except occasional words where it is necessary to establish or retain the focus point of the question;
- Unchanging questions again with five-point scales, addressing potential negative attributes or processes that can go wrong when using systemic and participative methods, and
- A set of open ended questions asking people to assess the process and / or provide measures for improvement from their own viewpoints. These questions are usually worded generally to be relevant to multiple perspectives, but specific questions relating to particular experiences can be added if required.

3.3.3 VALIDITY OF THE RESEARCH DESIGN

The central aim of the research design was to establish a relationship between the job attitudes of expatriate managers and the expatriate managers' propensity to return prematurely or resign during or shortly after the foreign assignment with a high degree of certainty. Bless and Higson-Smith (2000: 80) point out that the potential of a design to achieve this aim is referred to as the validity of the design. Validity is measured in terms of two separate, but related dimensions, namely internal and external validity.

3.3.3.1 Internal validity

Bless and Higson-Smith (2000: 80) argues that internal validity is concerned with the question: "Do the observed changes in the dependent variable actually relate to the changes in the independent variable?" Internal validity examines the extent to which the research design has excluded all other possible hypotheses which could explain the variation of the dependent variable. Terre Blanche *et al.* (2006:175-177) state that in order to achieve high internal validity, a research design should control as many extraneous variables as possible. Two possible complications were considered by the researcher in order to achieve high internal validity:

- Reactive effects to participating in the study. Prior to the data gathering participating subjects were not informed of what was foreseen to find in the data, and
- Measurement unreliability facilitated by using a well-researched, reliable and valid measurement instrument.

3.3.3.2 External validity

Over the last twenty years, according to Shenton (2004: 63–75), much has been achieved by advocates of qualitative inquiry in demonstrating the rigour and trustworthiness of their favoured form of provisions that may be made by a qualitative researcher wishing to address the four criteria for trustworthiness as reflected in Table 3.2.

Table 3.2: Provisions to ensure trustworthiness when doing qualitative research (Shenton, 2004: 73)

Quality criterion	Provisions to be made by researchers
<ul style="list-style-type: none">• Credibility	<ul style="list-style-type: none">• Adoption of appropriate, well recognised research methods;• Development of early familiarity with culture of participating organisations;• Random sampling of individuals serving as informants;• Triangulation via use of different methods, different types of informants and different sites;• Tactics to help ensure honesty in informants;• Iterative questioning in data collection dialogues;• Negative case analysis;• Debriefing sessions between researcher and superiors;• Peer scrutiny of project;• Use of reflective commentary;• Description of background, qualifications and experience of the researcher;• Member checks of data collected and interpretations / theories formed;• Thick description of phenomenon under scrutiny, and• Examination of previous research to frame findings.
<ul style="list-style-type: none">• Transferability	<ul style="list-style-type: none">• Provision of background data to establish context of study and detailed description of phenomenon in question to allow comparisons to be made.
<ul style="list-style-type: none">• Dependability	<ul style="list-style-type: none">• Employment of overlapping methods, and• In-depth methodological description to allow study to be repeated.
<ul style="list-style-type: none">• Confirmability	<ul style="list-style-type: none">• Triangulation to reduce effect of investigator bias;• Admission of researcher's beliefs and assumptions;• Recognition of shortcomings in study's methods and their potential effects;• In-depth methodological description to allow integrity of research results to be scrutinised, and• Use of diagrams to demonstrate audit trails.

In addressing credibility, researchers attempt to demonstrate that a true picture of the phenomenon under scrutiny is being presented. To allow transferability, researchers provide sufficient detail of the context of the fieldwork for a reader to be able to decide whether the prevailing environment is similar to another situation with which he or she is familiar and

whether the findings can justifiably be applied to the other setting. The meeting of the dependability criterion is difficult in qualitative work, although researchers should at least strive to enable a future researcher to repeat the study.

Bless and Higson-Smith (2000 cited by Birdthistle 2008: 421) argue that external validity is concerned with the question: “Do the results obtained from the sample apply to all the subjects in the population being studied?” External validity examines the extent to which the results of the study can be generalised. Three factors were considered in order to achieve high external validity:

- The representatives of the sample. The researcher paid specific attention to selecting a representative sample during the sampling procedure;
- Ensuring that the study simulates reality as closely as possible. During the construction of the measurement instrument care was taken to ensure that the items in the questionnaire were related to the actual working environment, and
- Replication in a different context. When the researcher compared the study results with similar studies in different contexts, similar conclusions were reached (Leedy and Ormrod, 2005: 99-100).

Leedy and Ormrod (2005: 100) suggest that to achieve confirmability, researchers must take steps to demonstrate that findings emerge from the data and not their own predispositions.

3.3.3.3 Pre-testing the questionnaire

Leedy (1997: 192) suggests that the questionnaire should be pre-tested on a small population. This would determine whether any questions might be misunderstood, and could assist the researcher in enhancing the quality, and ultimately the results of the questionnaire. The questionnaire was tested on five PMs; two key account managers, two consultants and two clients. The aim of the pilot study was to determine whether there were any weaknesses in the questionnaire and whether the questions were understandable and not ambiguous. From the results of the pre-test, it was evident that the questionnaire contained no significant flaws and it was ready for the final research.

3.3.3.4 Questionnaire covering letter

According to Leedy (1997: 196), the selfish interest of the researcher should be set aside in the covering letter. The correspondence should be persuasive, courteous, understanding and portray

respect for others that should ensure co-operation. In the covering letter (Appendix B) accompanying the questionnaire (Appendix C), the aim of the research was briefly explained, and the respondent was also assured that the content of the questionnaire would be regarded as strictly confidential. A second covering letter and questionnaire, appendices F and G respectively, were used to for assessing the PSO model and the effectiveness of the evaluation framework that was derived from this study. The covering letters were sent out under cover of the NDPW Port Elizabeth regional office and the Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.

3.3.4 VALIDITY AND RELIABILITY OF THE QUESTIONNAIRE

Reliability and validity are two key components that must be considered when evaluating a particular instrument. Leedy and Ormrod (2010: 28) suggest that the validity and reliability of the researcher's measurement instruments influence the extent to which a researcher can learn something about the phenomenon being studied, the probability that statistical significance will be obtained in the data analysis, and the extent to which the researcher can draw meaningful conclusions from the data.

3.3.4.1 Validity

According to Carrol (2009: 1) and Leedy and Ormrod (2010: 28), validity refers to whether an instrument, in this case the questionnaire actually measures what it is supposed to measure, given the context in which it is applied. Content validity refers to the extent to which a measurement is a representative sample of the content being measured. Construct validity refers to the extent to which an instrument measures a characteristic that cannot be directly observed, but must be inferred from the patterns in people's behaviour.

This study made use of both content and construct validity where the implemented measurement instrument, being the questionnaire, required feedback from respondents based on their behaviours, skills, and motivators in their work environment.

3.3.4.2 Reliability

Leedy and Ormrod (2010: 29) define reliability as the consistency with which a measuring instrument yields a certain result when the entity being measured hasn't changed. Leedy and Ormrod propose three ways to improve the reliability of a measurement instrument:

- The instrument should always be administered in a consistent fashion thereby being standardised to the extent that subjective judgements are required;
- Specific criteria should be established that dictate the kinds of judgements the researcher makes, and
- Research assistants who are using the instrument should be well trained in order to obtain similar results.

The questionnaire was given to two the NDPW PMs and one key staff member within the supply chain as well as a statistician from the NMMU to evaluate it for face and content validity as well as for conceptual clarity and investigative bias prior to disseminating to respondents.

3.3.5 DELIMITATION OF THE RESEARCH

3.3.5.1 Selection of the research sample

Where there is a large and irregular variation in the population, and the time or means to measure the whole population is not available, it is necessary to look at a method of sampling to overcome the problems mentioned. Parker (2010: 02) elaborates on, *inter alia*, the following forms of sampling:

- Simple random sampling where there is no systematic selection bias and each element of the population has the same probability of being selected. In particular, the variance between individual results within the sample is a good indicator of variance in the overall population, which makes it relatively easy to estimate the accuracy of results;
- Systematic sampling that involves a random start and then proceeds with the selection of every k th element from then onwards. In this case, $k = \text{population size} / \text{sample size}$. It is important that the starting point is not automatically the first in the list, but is instead randomly chosen from within the first to the k th element in the list. A simple example would be to select every 10th name from the telephone directory;
- Stratified sampling that is done by using simple random sampling on each strata, the population can be divided into sub-populations or strata;
- Clustering that involves selecting more than one unit at a given stage, and reduces data collection costs, but may increase the size of sampling errors, and
- Multi-stage sampling where this would require sampling to be done by, for example, firstly towns or districts, and secondly, individuals within the sampled towns or districts.

The five respondent groups in this research included clients, consultants, contractors, key NDPW staff, and NDPW project managers. The client respondents included programme managers, facilities management officials and liaison officers. The consultants comprised Architects, Quantity Surveyors, Electrical-, Mechanical, Civil- and Structural Engineers, H&S agents and private sector project managers. The key NDPW staff consisted of programme managers, project budget administration personnel, key account managers, directors, heads of departments, and regional managers.

For the purpose of this research, the method used to select the sample, was the simple random sampling method thereby eliminating the possibility of the researcher only selecting those respondents with whom he is familiar, the researcher decided to randomly select respondents from the NDPW Port Elizabeth, Umtata, Cape Town, Bloemfontein, Johannesburg, and Pretoria offices, client liaison officers, contractors and consultants who have worked with at least two regional offices. In this way, the data collected was a better reflection of the average opinion of the respondents. The consultant and contractor respondents were selected randomly from the Works Control System, an electronic medium that capitulate all details pertaining to projects, consultants and contractors.

According to Leedy and Ormrod (2010: 29), both validity and reliability, then, reflect the degree to which there are errors in the measurements. In many instances and especially when measuring insubstantial phenomena a measurement instrument may facilitates measuring a characteristic only indirectly and so may be subject to a variety of biasing factors for example people's responses on a rating scale are apt to be influenced by their interpretations, prejudices, and memory lapses. Generally speaking, validity errors reflect biases in the instrument itself and are relatively constant sources of error.

In contrast, reliability errors reflect use of the instrument and are apt to vary unpredictably from one occasion to the next. According to Leedy and Ormrod (2010: 29), questionnaires are often subject to bias, but it is also mentioned that data containing bias, cannot always be avoided. By using simple random sampling a great deal of bias has been eliminated, however, bias could have influenced some conclusions made about the data collected although the researcher would want to assure the reader that the latter was avoided to its full extent.

3.3.5.2 Rate of response

Denscombe (2000:19) defines the response rate as “the proportion of the total questionnaires distributed which are successfully completed and returned as requested.” Babbie and Mouton (2001: 261) argue that a response rate of 50% is adequate for analysis and reporting, and that according recent research findings, it now seems clear that a low response rate does not guarantee lower survey accuracy and instead simply indicates a risk of lower accuracy as lower response rates also give rise to bias. The validity of the questionnaire findings are affirmed by the following.

According to Babbie and Mouton (2001: 261), a response rate of more than 70% is considered to be very good. One-hundred-and-seventeen (117) questionnaires were received, which equates to a response rate of 73.1% (117/160) as illustrated in Table 3.3, which is considered to be more than adequate. The five respondent groups included clients, consultants, contractors, key NDPW staff, and project managers. The client respondents included programme managers, facilities management officials and liaison officers. The consultants comprised Architects, Quantity Surveyors, Electrical-, Mechanical, Civil- and Structural Engineers, H&S agents and private sector project managers. The key NDPW staff consisted of programme managers, project budget administration personnel, key account managers, directors, heads of departments, and regional managers.

Table 3.3: Population of research respondents

Respondents	Sent	Returned	Response rate (%)
Key client representatives	15	10	66.7
Consultants	50	37	74.0
Key NDPW staff	20	13	65.0
Contractors	30	20	66.7
PMs	45	37	82.2
Total	160	117	73.1

Frohlich (2002: 530-562) suggests that a questionnaire of 40-50 items spread over four to five pages would elicit high response rates. He argues that if a survey is under four or five pages, resistance to participate would be lower and the response rate higher. The questionnaire used in the study varied from 9 to 18 pages long and contained 106 to 264 items as

questionnaires that were adjusted according to the different respondents' involvement within the project implementation process as illustrated in Table 3.4.

Table 3.4: Questions posed to respective respondents illustrating the number of items per questionnaire.

Respondents	Questions posed	Items (No.)
Client representatives	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25	224
Consultants	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25	224
Key NDPW staff	4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28	224
Contractors	7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 22, 25	106
Project managers	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28	264

The negative influence of the length of the questionnaire was confirmed by comments received from some of the respondents. However, the length of the questionnaire could not be reduced further without influencing the validity of the research topics. Fifty four respondents choose not to complete some of the open-ended questions. The main contributing factor to the low response rate in answering the open-ended questions was due to the length of the questionnaire which is commonly believed to reduce the response rate according to De Vos *et al.* (2005: 167). Additional responses to the open ended questions were by conducting telephonic and personal interviews.

3.3.5.3 The demographic profile of the respondents

The demographical and work-related characteristics of the sample are discussed in order to evolve a profile of the survey group. Data analysis was done through frequency distributions. Babbie (2004: 401) indicates that a frequency distribution is a description of the number of times the various attributes of a variable are observed in a sample. Consequently frequencies describe the characteristics of the sample. Information that will be given on all relevant questions posed in Part 1 of the questionnaire is displayed in both tabular and graphical format.

The purpose of the graphical format is to provide a visual illustration of the sample. Table 3.5 illustrates the level of academic achievement of the respondents. The two largest single groups of participants (35.5% and 34.6%) respectively have a National / National Higher Diploma or a Bachelor's degree or equivalent in their respective professions with only 16.2% of the participants having some form of qualification in project management that varies from a certificate, National Diploma, Higher National Diploma or a Master's degree or equivalent.

Table 3.5: Participants' highest academic achievement (n=117)

Academic achievements	Frequency	Percentage	Cumulative Percentage
None	6	5.1	5.1
Trade Certificate - Artisans	9	7.7	12.8
Certificate in Project Management	6	5.1	18.0
Diploma in Project Management	10	8.6	26.5
Bachelor's degree or higher in Project Management	3	2.6	29.1
ND / HND profession	41	35.5	63.7
Bachelor's degree or equivalent in profession	40	34.6	98.3
Honors degree or equivalent in profession	1	0.9	99.2
Master's degree or equivalent in profession	1	0.9	100
PhD in profession or equivalent in profession	0	0	100

The high level of education supports Hill's (2003: 612- 613) argument that two of the main reasons for using expatriates are the transfer of knowledge and skills, and potential management development. The majority of respondents (87.2%) have either a certificate or a degree in project management or in a profession such as Architecture; Quantity Surveying; Civil-; Electrical-; Mechanical- or Structural Engineering, and H&S, which constitutes sufficient academic background within the project management and construction environment.

Table 3.6: Mean values and standard deviation values of the respondents' experience (n = 117)

Groups	Valid N	Mean	Minimum	Maximum	SD
Clients	10	28.1	15	37	7.49
Consultants	37	21.1	5	50	11.44
Key NDPW Staff	13	18.2	4	32	9.63
Contractor	20	24.0	10	38	8.87
PMs	37	19.7	2	38	10.39
Total	117	21.4	2	50	10.40

Table 3.6 illustrates the mean value of the respondents' experience as being 21.4 with a standard deviation of 10.40 while the minimum years' experience is 2 years and the maximum is 50 years. Most of the respondents (84.6%) of the participants in the study have more than 10 years' experience within the project management and construction environment in the capacity of their profession which was deemed to be adequate.

Table 3.7 illustrates the mean value of the respondents' experience of number of the NDPW projects as being 22.8 with a standard deviation of 21.10 while the minimum number of projects equals 1 project and the maximum is 100+ projects. Note that the key NDPW staff are not directly involved with managing projects, but only with the project implementation process and project administration, hence no reflection of the number of projects the key NDPW staff have been directly involved in. Most of the respondents (84.6%) have been involved in more than ten projects within the NDPW environment, which constitutes sufficient knowledge of the project implementation processes and managing projects within the NDPW.

Table 3.7: Number of the NDPW projects the respondents have been involved in (n = 104)

Groups	Valid N	Mean	Minimum	Maximum	SD
Clients	10	15.4	7	27	6.06
Consultants	37	15.4	1	35	8.69
Contractor	20	19.1	7	44	9.03
PMs	37	34.3	7	100	30.48
Total	104	22.8	1	100	21.1

Generally the nature of the NDPW projects are repairs and renovations projects of which the average values are R5 to R15 million with the odd project exceeding R20 million which is affirmed by the fact that the majority of the respondents (67.3%) have worked on projects with an average value below R10 million. Capital works projects can vary from R1 million to R100 + million depending whether it is a construction of a new building or just providing mechanical ventilation to an existing building. The relatively low mean value of 9.60 (Table 3.8) is also attributed to the fact that engineers base the value of their projects on the apportioned value of their discipline and not the total value of the project.

Table 3.8: Mean and standard deviation values of the project values (n = 104)

Groups	Valid N	Mean	Minimum	Maximum	SD
Clients	10	12.0	1.5	33.5	10.33
Consultants	37	9.4	1.2	40	7.94
Contractor	20	12.4	2	40	12.12
Dept. PM	37	7.7	1	25	6.64
Total	104	9.6	1	40	8.8

The purpose of establishing the average value of projects is to derive a general indication of the nature and complexities of the projects, whether repairs and renovations or capital works projects, as well as the number of role players and consultants involved. Experience has also proven that one can have more difficulty in managing and completing a smaller project which is

generally attributed to the fact that the majority of contractors working on smaller projects are less experienced than larger well established contractors working on larger projects above R20 million.

It should also be noted that projects above R20 million have generally be managed by more senior PMs in the past which by implication has proven that respondents' reporting and assessments who have been involved on larger projects were found to be more positive purely because these respondents have been working with more experienced and senior PMs. This also implies that a senior PM can manage projects from R1 to R130+ million and in very rare cases up to R300 million.

3.3.6 PROCEDURE FOR DATA MANAGEMENT

3.3.6.1 Administration of the data collection

A self-administered questionnaire was developed and pre-tested. The questionnaire was in electronic format and was sent and returned via e-mail as an attachment in Microsoft Excel. A section on biographical characteristics was added as Part 1 of the questionnaire to gather relevant background, personal and organisational information. The questionnaire e-mails were sent over a period of approximately two weeks. All e-mails were successfully delivered to the intended 160 respondents by requesting notification of successful delivery of the questionnaire through the return e-mail function.

In line with the advice of Leedy and Ormrod (2005: 191) clear instructions were given at the beginning of each section as well as clear explanations on the interpretation of the measurement scales. The questionnaire was accompanied by a covering letter explaining the purpose of the study to the prospective participant, the importance of completing the questionnaire, the confidentiality agreement and general instructions on how to complete the questionnaire.

Completed questionnaires were returned to the researcher directly. A reminder was sent to the respondents after two weeks had lapsed to remind the respondents to complete and return the questionnaires. Telephonic interviews were also conducted with some of the respondents, especially contractors and departmental PMs to urge them to complete and return the questionnaires.

Having procedures for the administration of the returned questionnaires was as important as collecting the data. Telephonic and one-on-one interviews were conducted both prior to disseminating the questionnaire and after receiving the questionnaire to gain further insight into the problem situation. Administration of the returned questionnaires included questionnaire coding and editing, data entry, and data cleaning and data-processing. Activities performed by the data capturer during this phase of the study concentrated mainly on the following:

It was necessary to check the completed questionnaires prior to data entry, to code all items in the questionnaire and eliminate incorrect responses. The questionnaires were checked missing data. Finchilescu *et al.* (2005: 209-210) recommend dealing with missing data by either removing the respondent from the data file or replacing the missing number with the average of the respondent's other scores if not more than 25% is missing. Roth and Switzer (1995) recommend, among other techniques, list-wise deletion and regression imputation. List-wise deletion eliminates all the data for an individual when there is any missing data and regression imputation uses related variables to estimate or impute missing values. Only answers that had been omitted was to some of the open ended questions in which instances telephonic and personal interviews were conducted to obtain additional responses to the open-ended questions. No questionnaires were eliminated.

A reference number was allocated to every returned questionnaire assigned to the each respondent (1-117). A schedule was maintained on the reference number, the date the completed questionnaire was received, and any comments the researcher wanted to remember regarding the respondent. Various respondents also added interesting messages and remarks to their questionnaires, which are reflected in the findings. A Microsoft Excel spread sheet data file was prepared and a research assistant appointed. The assistant entered the data directly from the questionnaire with the assistance of the code list. As accuracy was extremely important during the coding and entering of the data that was necessitated by the sample size. The data was captured twice and then compared to eliminate any mistakes.

The statistical analysis of the data was undertaken by the Department of Statistics at the Nelson Mandela Metropolitan University, South Africa. The Excel spread sheet was e-mailed to the statistician who processed the data using the statistical programme SPSS version 10. The researcher and the statistician agreed on the statistical analysis methods to be used.

3.3.6.2 Reliability of the measurement instrument

Cooper and Schindler (2003: 231) state that a good measurement tool should be an accurate indicator of what the researcher is interested in measuring, and in addition, easy and efficient to use. Three major criteria exist to determine the above: the scientific requirements of validity and reliability, and the operational requirement of practicality. Cronbach alpha coefficients were computed to assess the internal reliability of the measuring instrument and items that are used in the study. This index is indicative of the extent to which all the items in the measuring instrument measure the same characteristic, and that the set of variables is consistent within what it is intended to measure. If multiple measures are taken, the values of the reliable measures will all be consistent (Field, 2005: 666-669). Reliability differs from validity in that it relates not to what should be measured, but instead to how it is measured.

3.3.7 PROCEDURE FOR QUANTITATIVE DATA ANALYSIS

The purpose of the study was to identify the specific factors and to determine the major shortcomings within the NDPW's project implementation processes and to devise improvements to facilitate project success and improved service delivery. The study examined the relationships of a set of independent variables; both PM and organisational capabilities and competencies, contribution to project success by the different role players as well as organisational maturity in project implementation. The following descriptive and inferential statistical procedures were used:

3.3.7.1 Descriptive statistics

Descriptive statistics such as means, standard deviations, frequencies, percentages, tables and graphs, are techniques used to describe characteristics of a data set and to compare results. The mean is the best-known measure of central tendency that reveals what sets of measures are on average. The mean for a set of data is the sum of the values divided by the number of values. The mean is often quoted along with the standard deviation. The mean describes the central location of the data, and the standard deviation describes the spread. The standard deviation shows how much variation or dispersion exists from the average mean. A low standard deviation indicates that the data points tend to be very close to the mean, whereas high standard deviation indicates that the data points are spread out over a large range of values. Babbie (2004: 402-405)

state that the higher the standard deviation, the greater the distances, on average, above or below the mean.

3.3.7.2 Cronbach's alpha

Cronbach's alpha is used as an estimator of the internal consistency and reliability of the scores that range from 0 to 1 with a value of above 0.50 regarded as acceptable according to Cooper and Schindler (2003: 216-217). There is considerable debate in the literature as to what constitutes 'acceptable' or a 'sufficient' alpha. Terre Blanche *et al.* (2006: 154) state that questionnaire-type scales with an alpha greater than 0.75 are considered reliable, i.e. the data is internally consistent. Field (2005: 668) advocates that reliability coefficients in the range of 0.50 to 0.60 are deemed sufficient. Connelly (2011: 1) argues that for comparing groups, 0.70 to 0.80 is regarded as satisfactory. For clinical application, much higher values of 0.90-0.95 are needed. In this instance the statistician agreed that a Cronbach's alpha coefficient of 0.70 and higher is deemed to be sufficient.

3.3.7.3 Parametric statistics - Analysis of variance

To avoid the problem of multiple t-tests in a single-factor design, the researcher used a one-way analysis of variance (ANOVA) to test for significant differences between the respective respondent groups. In essence, one-way ANOVA, tests for the presence of some overall significance that could exist somewhere among the various levels of the independent variables. The ANOVA is used to look for statistically significant differences among three or more means by comparing the variances (X^2) both within and across groups. According to Terre Blanche *et al.* (2006: 227-229), the ANOVA yields an F score and similar the score from a t-test, the F score examines the extent to which the obtained mean differences could be due to chance or some other factor, presumably the independent variable.

3.3.7.4 Tukey's Honestly Significant Difference Post Hoc test

The Tukey's Honestly Significant Difference (HSD) Post Hoc test for independent groups is an appropriate inferential test to test a hypothesis in which the mean scores on some variable will be significantly different for two independent groups. The Tukey's HSD Post Hoc test is used to compare the two population means and compare distributions that are normally distributed. Zikmund (2003: 524-525) and Terre Blanche *et al.* (2006: 226) argue that it can

be assumed that the two groups of data are drawn from a normal distribution and the data is on an interval scale.

3.3.7.5 Non-parametric statistics - Pearson's correlation coefficient

The Pearson correlation coefficient is used to determine the correlation between different variables contributing to the present situation of poor project implementation and service delivery. It measures central tendency mean values and standard deviation related to only a single variable. It is also used to determine how many more variables were interrelated. The statistical process, according to Leedy and Ormrod (2005: 265), by which the nature of relationships among different variables is discovered, is called correlation. The resulting statistic, called a correlation coefficient is a number between - 1 and + 1. A correlation coefficient for two variables simultaneously provides two different answers. The direction of the relationship is indicated by the sign of the correlation coefficient where a positive number indicates a positive correlation, and the strength of the relationship is indicated by the size of the correlation coefficient. The closer the value of a correlation coefficient (S) to -1.00 or +1.00, the more accurate is the prediction that one variable is related to another variable.

3.3.8 PROCEDURE FOR QUALITATIVE DATA ANALYSIS

Exploratory questions were included to develop an in-depth understanding of human behaviour and the reasons that govern such behaviour relative the respondents' real life experiences when working on NDPW projects in order to become aware of important variables operating in the phenomenon under study. This was achieved by including the open- ended questions in the pre-structured questionnaire.

The following open-ended questions were included:

Question 5: To what extent does an inadequate project brief contribute to client dissatisfaction?

Question 6: To what extent must the NDPW's project briefings be improved?

Question 12: What are the negative implications of mismatching the departmental PM?

Question 18: Is the cause of project failure in terms of cost; time; scope creep; social objectives, and quality more system based because of red tape in departmental procurement methodology, or people based being organisational; PMs; consultants; contractors, or a combination of both?

Question 25.1: In what manner are contractors assessed when registering with the cidb?

Question 25.2: Currently, when updating the cidb project completion report the contractor is only assessed in terms of whether the project was completed on time, within budget and within the set quality parameters by indicating 'Yes' or 'No' to each one of the factors. Do you think this type of assessment is sufficient or should more pertinent questions be asked? If yes, please list a few aspects you would prefer contractors to be assessed on upon completion of a project.

Question 25.3: Are the majority of the contractors that are registered with the cidb suitably graded?

Question 25.4: What are the potential benefits for a client making use of cidb registered contractors?

Question 25.5: Does cidb registration guarantee performance?

Question 25.6: What strategies and best practices should be adopted to improve the development of emerging contractors?

From a qualitative perspective, the answers to the questions above were analysed through analytical induction. Manning (n.d. cited by De Vos, 1998: 338) defines analytical induction as seeking "to develop universal statements containing the essential features of a phenomenon, or main reasons that are always found to cause or lie behind the existence of a social occurrence." Marshall and Rossman (n.d. cited by De Vos, 1998: 342-343) identified five stages in qualitative data analysis that was used in this study:

3.3.8.1 Sorting the data

The answers of every participant were read many times to become familiar with the data that was listed.

3.3.8.2 Generating categories, themes and patterns

The questions were not pre-coded because the researcher had little idea about the range of different reasons that participants might come up with. Participants answering the open-ended questions were not forced at the time of data collection to adjust their answers to categories. Respondents were allowed to express their own opinions freely. The coding was done as part of qualitative data analysis. Buckingham and Saunders (2004: 139) state that cite the “...different people may devise different sets of categories from reading the same responses.” A list of the various main response ideas was compiled from the numerous basic comments received from the respondents and recorded in the findings.

3.3.8.3 Testing the emerging hypotheses against the data

Once the patterns became apparent in the data, the patterns were tested it against the hypotheses and the literature. The purpose was to evaluate the data for informational accuracy, credibility usefulness and centrality.

3.3.8.4 Searching for alternative explanations of the data

As patterns between the categories emerged in the data, the researcher engaged in challenging the patterns that became apparent. The researcher sought other plausible explanations for the data and the links between them. The purpose was to ensure that the explanation given would be the most probable explanation of all possible explanations.

3.3.8.5 Recording the findings

As the qualitative data was central to the analytic process, the results were compared with the results of the quantitative analysis. The goal was to integrate the themes and concepts into a theory that would offer an interpretation of the research arena (De Vos, 1998: 342-343; Babbie, 2004: 314-324; Hardy and Bryman, 2000: 548-553; Leedy and Ormrod, 2005: 142).

3.3.9 PROCEDURE FOR DATA INTERPRETATION

Data interpretation aims at extracting meaning from the analysed data. After data analysis the researcher had to arrange the quantitative and qualitative data to get it to reveal aspects of interest about the project implementation process and impediments within the NDPW. Neuman

(2006: 343) states that the major concern of data interpretation is to answer the question of statistical significance, i.e. how safe are generalisations from a part to a whole. Babbie (2004: 459) defines statistical significance as the likelihood that relationships observed in the sample can be attributed to sampling error alone. The reliability of the generalisation, i.e. the probability of error, will depend on the extent to which the sample mirrors the population. A relationship is significant at the .05 level of the likelihood. Interpreting the data means the following:

- Relating the findings to the original research problem and the specific research questions and hypotheses;
- Relating the findings to pre-existing literature, concepts, theories and research studies;
- Determining whether the findings have practical as well as statistical significance, and
- Identifying limitations of the study.

Once the data had been analysed a model for establishing PSOs within the regional offices as well as a framework for improving project implementation and evaluation was deduced. Both the PSO model and project evaluation framework were tested by content analysis through a sample of 119 respondents to verify the content validity of the necessity for PSOs and the best-practice project evaluation framework.

3.4 ETHICAL CONSIDERATIONS

Driscoll and Brizee (2012: 1) and Leedy and Ormrod (2010: 101 – 104) provide the following ethical considerations when doing primary research to which researchers must adhere to:

- Obtain necessary approvals for doing the research and make sure not to violate any conditions / considerations;
- When doing research, be sure not to take advantage of easy-to-access groups of people simply because they are easy to access. Respondents must be chosen based on what would benefit the research the most;
- Informed consent. Participants in the study need to be informed of exactly what the study is about and their participation in the study should be voluntary, i.e. freedom from coercion where no individual or organisation was pressurised to participate in the research study;
- Protection from harm. A researcher must not expose participants in the study to any avoidable physical or psychological harm;
- Objectivity vs. subjectivity. Personal biases and opinions must get in the way of the research and both sides must be given fair consideration;

- **Honesty with professional colleagues:** A researcher must report his / her findings in an honest and complete manner. The results of the study must not be manipulated and misrepresented in any way. Results must be accurately represented in terms of what was observed or what was said, or what the outcome was. Do not take interview responses out of context and do not discuss small parts of observations without putting them into the appropriate context, and
- **Right to privacy:** The researcher must always consider the participants right to privacy. At no point in time may the details and how a particular respondent responded to the questionnaire be revealed to others. The data from the study is published in a way that protects the anonymity of the participating organisations and their employees. The data is stored without identification.

3.5 CONCLUSIONS

This chapter presented the theoretical basis of the research design and formulation of the questionnaire used as part of this study and treatment of the data. This study explores the use of system thinking in a multi-methodological approach to improve project implementation and service delivery within the NDPW to ensure project success and building organisational competencies. By utilising a mixed methods approach in which the different quantitative / qualitative methods complement each other's strengths and weaknesses, biases can be equalised, resulting in an improved solution that better explains the problem under study.

Advantages of multi-method research approach are that it is generally more comprehensive and increases the understanding of the problem situation that accommodates more in-depth questions, and facilitates triangulation of results. Triangulation is used to increase the reliability by reducing systematic error, through a strategy in which the researcher employs multiple methods of measurement such as surveys; observations; archive data; interviews; workshops; brainstorming, and outcomes of intervention meetings that will aid in the development of models and frameworks for improvement.

The following chapter, Chapter 4, will take the research a step further by analysing and interpreting the response data obtained through the questionnaire and interviews upon which the hypotheses will be tested.

CHAPTER FOUR

DATA ANALYSIS AND TESTING THE HYPOTHESES

4.1 INTRODUCTION

Data analysis, according to De Vos (2002: 339), is “the process of bringing order, structure and meaning to the mass of collected data.” This chapter presents the data analysis and interpretation of the results from the collection of data through interviews and questionnaires, in the process answering questions raised by sub-problems, while the research findings are used to test the hypotheses.

The aim of this study is to determine whether a systems approach to project implementation within the public sector will improve service delivery. The data obtained from the completed questionnaires is presented and analysed by means of various analyses.

The empirical findings of the research project, data analysis and interpretation of results provide answers to sub-problems 1 to 9:

- S-P1: To what degree do the clients contribute to project success or failure?
- S-P2: Are project objectives clearly defined for assessing the level of project success?
- S-P3: Are project briefings adequate to limit changes to cost, scope, time, and quality?
- S-P4: Do the project managers' capabilities match the actual post requirements?
- S-P5: Has the NPDW adopted project management as a corporate methodology?
- S-P6: How often are project managers mismatched to projects and what are the consequences?
- S-P7: Will cidb registration of contractors ensure improved performance and increase the current project success rates?
- S-P8: To what extent are projects being monitored, reviewed and evaluated effectively to induce organisational learning?
- S-P9: Will project success rates improve by establishing PSOs within the regional offices thereby assist the NDPW to become a project competent organisation?

4.2 ANALYSIS AND INTERPRETATION OF RESULTS OF LIKERT-TYPE QUESTIONS

Question 1: Do clients know what their accommodation requirements and needs are at the project briefing with regards to the key elements of the project brief?

This question sought to establish firstly whether clients have sufficient knowledge of their own accommodation requirements and needs, and secondly the extent to which the PM is informed of the required project outcomes at the time of the briefing meeting. The question also aimed to emphasise the importance of the key elements that form part of the project brief to formulate project objectives as shown in Table 4.2.1.

Table 4.2.1: The importance of key elements of the project brief relative to the respective knowledge levels of the clients and the NDPW PMs (n=84)

Key elements of the project brief	MS (Clients)	MS (PMs)	MS (Imp)	Rank
Budget limit.	3.08	4.12	4.49	1
Functionality of the building - facilities and operational flow within the building.	2.51	3.44	4.31	2
Time schedules and required delivery date.	3.08	3.68	4.11	3
Health and safety requirements.	2.71	3.40	4.05	4
Real accommodation needs.	2.44	3.35	3.92	5
Procurement method and processes.	3.24	3.81	3.80	6
Legislative requirements - municipal by-laws and building regulations.	2.29	3.24	3.54	7
Performance requirements - standards and green building technology.	2.35	3.26	3.24	8
Training programmes on projects - skills transfer via EPWP and the NYS programmes.	2.45	3.25	3.12	9
Use of local suppliers, labour and subcontractors - participation goals.	2.27	3.05	2.93	10
Mean MS	2.64	3.46	3.75	

Table 4.2.1 illustrates the importance of elements of the project brief in terms of MSs based upon responses to a scale of 1 (not important) to 5 (very important). Most of the elements can be deemed to be important to very important given that nine of the ten (90%) of the elements achieved MSs > 3.00 with a mean MS of 3.75.

Table 4.2.1 also illustrates the extent to which client representatives and the NDPW PMs are informed of the key elements of the project brief in terms MSs based on responses to a scale of 1 (not informed) to 5 (in-depth knowledge). The rating of clients resulted in a mean MS of 2.64, and three of the ten elements (30%) achieved MSs $\geq 3.08 \leq 3.24$. This implies that the client representatives are deemed to have sufficient knowledge only on the following elements of the project brief: procurement method and processes (3.24); time schedules and required delivery date (3.08), and the budget limit (3.08). The client representatives have insufficient knowledge of their accommodation needs and are partially informed at the time of the project brief as the

remaining seven elements (70%) achieved MSs $> 2.27 \leq 2.71$. The client representative's knowledge is found lacking on all the major elements that will lead to major time and cost overruns because of continuous scope changes on the project that include changes to: performance requirements, standards and technology (2.35); real accommodation needs (2.44); H&S requirements (2.71), and the functionality of the building and the operational flow within the building (2.51).

The rating of PMs resulted in a mean MS of 3.46. All ten elements of the project brief (100%) achieved MSs between $> 3.05 \leq 4.12$, which implies that the PMs are deemed to be more informed about the clients' needs and in some instances have advanced knowledge of the clients' needs based on the information received with the procurement instruction. The PMs will however not be aware of any changes to the original planning instruction that reflects the original accommodation needs at the time of the project briefing unless duly informed by the client, or if the planning instruction is incomplete, which is most often the case.

The clients' inadequate knowledge of the key elements of the project brief that constitute their needs, negatively impacts on the quality of the project brief, as project objectives cannot be clearly defined. This scenario lends itself to incomplete and improper briefing in terms of scope, standards, time frames, as well as project objectives as it is not clearly defined at the time when briefing the consultants who must do the planning. The client inevitably leaves the project brief with unrealistic expectations that will lead to client dissatisfaction upon completion of the project. It is inevitable that this situation will result in creep in terms of cost and time, which includes continuous changes, even late in the construction phase. Hence the vast number of variation orders on the NDPW's projects of which the maximum permissible percentage was reduced from 30% to 20% in 2011 by the Director General of the NDPW.

Projects are set up for failure from the start when the project brief is deficient due to the limitations of the client representatives and the PM, and their inability to conduct comprehensive project briefings to ensure that all the important elements of the project are fully addressed.

Question 2: To what extent do the following aspects of the project change from project briefing to project closeout, and how does it impact on the perceived level of project success and client satisfaction.

Table 4.2.2 illustrates the frequency of occurrence of project brief elements that change from the project briefing to project completion in terms of MSs based upon responses to a scale of 1 (very

seldom) to 5 (always). The rating of the frequency resulted in a mean MS of 2.90 and six of the ten elements (60%) achieved MSs $\geq 3.00 \leq 3.45$, which are: changes in accommodation needs (3.45), redesign of building in terms of facilities, H&S requirements, and operational flow within the building, Specification and minor design changes (3.27), increased project cost (3.18), changing time schedules during planning and construction phases (3.04), and delays in procuring the services of consultants and contractors (3.00).

Table 4.2.2: The frequency of occurrence of project brief elements that change from project briefing to project completion versus the impact it has on the perceived level of project success (n=84)

Elements of the project brief that change throughout the project lifecycle	MS (Imp)	MS (Freq)	Rank
Changes in accommodation needs - scope creep.	4.14	3.45	1
Redesign of the building - facilities, H&S and operational flow within the building.	4.00	3.36	2
Specification and design changes.	3.74	3.27	3
Increased project budget - cost creep.	3.74	3.18	4
Changing time schedules during planning and construction phases - time creep.	3.17	3.04	5
Delays in procuring the services of consultants and contractors.	3.60	3.00	6
Non-compliance to health and safety requirements while the building is under construction.	2.15	2.68	7
Changes in legislative requirements - municipal by-laws and building regulations.	2.35	2.61	8
Successful use of local suppliers, labour and sub-contractors - contract participation goals.	3.82	2.42	9
Implementation and successful completion of training programmes – EPWP and the NYS.	2.57	1.96	10
Mean MS	3.33	2.90	

The constant changes are attributed to the fact that projects are registered 3 to 5 years prior to being implemented. The completion of planning is generally delayed due to out-dated needs assessments, the lack of funding or clients giving authorisation to proceed with projects with unrealistic timelines that cannot be implemented in time, or when implemented with numerous variations as planning could not have been done appropriately. Project objectives are also not clearly defined by the client at the time of briefing due to the client representatives being ill informed of their actual requirements, hence various changes throughout the project life cycle.

Table 4.2.2 illustrates the impact that the changes to the project brief have on the perceived level of project success based upon responses to a scale of 1 (no impact) to 5 (severe impact). The

rating of the impact resulted in a mean MS of 3.33. The seven of the ten variables (70%) that achieved MSs ≥ 3.00 are: changes in accommodation needs (4.14); redesign of building in terms of facilities, H&S requirements, and operational flow within the building (4.00); successful use of local suppliers, labour and subcontractors also referred to as contract participation goals (3.82); specification and minor design changes (3.74); increased project cost (3.74); delays in procuring the services of consultants and contractors (3.60), and changing time schedules during planning and construction phases (3.17). It is also evident that elements with a higher impact on the perceived level of project success tend to occur more often where the frequency of occurrence varies from often (3.00) to very often (3.45).

The three elements of the project briefing that have the least impact on the perceived level of project success and which achieved MSs < 3.00 also happen to be some of the South African government's highest priorities in terms of creating safe working environments, job creation, and transfer of skills and distribution of wealth through black economic empowerment initiatives. These elements include: compliance to H&S requirements while the building is under construction (2.15) that happens seldom (2.68); changes to legislative requirements (2.35) which happens seldom (2.61), and the training programmes that are seldom implemented and completed successfully on projects (2.57) that very seldom happens (1.96), which is defeating the object of implementing programmes of this nature in the first place. Hence the current lack of interest by the majority of the role players with respect to the success of training programmes on projects, as it has only has little impact on the perceived level of project success and client satisfaction. The majority of the clients regard training as additional to the project which is forced upon them by legislation for which they are paying for which no benefits are received.

Question 3: Are the following elements addressed adequately during briefing meetings and how important is it that these factors are addressed during the project initiation stage?

The PM must ensure that all criteria of the project briefing listed in Table 4.2.3 are addressed adequately at project briefings by way of setting clear objectives in order to achieve project success. Table 4.2.3 illustrates the importance of elements of the project brief in terms of MSs based upon responses to a scale of 1 (not important) to 5 (very important). The rating resulted in a mean MS 4.05 and all eighteen elements (100%) achieved MSs $\geq 3.04 \leq 4.55$.

The five most important elements are: quality (4.55); extent of client involvement (4.44); project cost control measures (4.36); executability of the project (4.33), and H&S (4.33). The two least important factors are implementing contract participation goals by making use of local suppliers,

labour and subcontractors (3.04), and the provision of formal training on HIV and AIDS, and transfer of technical skills (3.13). The reason being is that it is seen as additions to the project therefore not adding real value to the project as the implementation thereof generally fails to achieve the respective programmes' intended benefits.

Table 4.2.3: The importance of addressing criterion of the project brief relative to the current level of performance (n=84)

Criterion	MS (Perform)	MS (Imp)	Rank
Quality.	2.94	4.55	1
Extent of client involvement.	2.81	4.44	2
Project cost and cost control measures.	3.02	4.36	3
Health and safety.	2.94	4.33	4
Executability of the project.	3.17	4.33	5
Scope control measures.	2.99	4.21	6
Consider future maintenance cost.	3.06	4.20	7
Accountability of role players.	2.95	4.17	8
Commencement date of construction.	3.01	4.17	9
Functionality of building.	3.40	4.15	10
Roles and responsibilities of all role players.	2.92	4.12	11
Communication networks.	3.12	4.08	12
Standards and specifications including green building technology.	2.82	3.93	13
Environmental impact.	2.98	3.90	14
Aesthetics of building.	3.19	3.89	15
Procurement method.	3.20	3.87	16
Formal training on HIV and AIDS, and technical skills transfer.	2.88	3.13	17
Contract participation goals - making use of local suppliers, labour and subcontractors.	2.80	3.04	18
Mean MS	3.01	4.05	

Table 4.2.3 illustrates in terms of MSs based upon responses to a 1 (totally inadequate) to 5 (very good). The rating of the current level of performance resulted in a mean MS of 3.01 that achieved $MSs \geq 2.80 \leq 3.40$ ranging between inadequate and adequate. The following ten of the eighteen elements (55.6%) of the project brief are deemed to be addressed inadequately at project briefings of the NDPW: scope control measures (2.99); environmental impact (2.98); accountability of the respective role players (2.95); quality (2.94); H&S requirements (2.94); roles and responsibilities of all role players (2.92); formal training on HIV and AIDS, and technical skills transfer (2.88); standards and specifications (2.82); the extent of client involvement (2.81), and contract participation goals to make use of local contractors, subcontractors, labour, and suppliers (2.80).

It is notable that the key elements of project briefings of the NDPW are not addressed adequately at the time of the project briefing that will ultimately result in increased costs, implementation time as well as quality issues that will culminate into increased client dissatisfaction.

Question 4: Which of the following factors drive changes to the construction brief and what impact does it have on achieving project success and client satisfaction?

Table 4.2.4 illustrates the impact on project success and level of client satisfaction caused by factors that drive changes to the construction brief in terms of MSs based upon responses to a scale of 1 (no impact) to 5 (severe impact). The rating of importance resulted in a mean MS of 3.99, and thirty of the thirty drivers achieved $MSs \geq 3.05 \leq 4.57$. The factors are deemed to have a moderate to severe impact on achieving project success and client satisfaction given the fact that all thirty factors (100%) achieved $MSs > 3.00$.

The ten factors that impact on project success and client satisfaction the most include: lack of information provided by PMs or delays in issuing thereof (4.57); lack of information provided by the client or delays in issuing thereof (4.53); lack design experience of the consultant team (4.51); uncoordinated and incorrect / incomplete construction documents (4.45); lack of presentation and visualisation of the design by the consultants (4.42); project end users are not involved in the briefing process (4.40); project brief information is still being given late in the design phase and during the construction phase (4.37); project end users appear at later stages of the project – usually near practical completion and hand over (4.35); lack of regulatory and incomplete up-dating on progress made per project phase, and the lack of understanding the client's functionality by both the client and the designer (4.31).

Table 4.2.4 also illustrates the frequency of occurrence of the factors that drive changes to the construction brief that impact on the level of project success and client satisfaction based upon responses to a scale of 1 (very seldom) to 5 (always).

Table 4.2.4: The frequency of occurrence of elements that drive changes from the project brief relative to its impact on project success and client satisfaction (n=84)

Divers of change	MS (Impact)	MS (Freq)	Rank
Stakeholders change project requirements and have second thoughts at later stages.	4.30	3.46	1
Clients / end users exaggerate their needs.	4.09	3.34	2
Lack of information provision by client or delay in issuing thereof.	4.53	3.25	3
Upgrade project facilities.	3.60	3.25	4
Project end users appear at later stages of the project.	4.35	3.20	5
Lack of design experience of the consultant team.	4.51	3.13	6
Project end users are not involved in the briefing process.	4.40	3.09	7
Improper communication between the client and the designer.	4.23	3.07	8
Lack of presentation and visualisation of design by consultants.	4.42	3.07	9
Lack of communication and co-ordination between government authorities and design firms over planning and approvals.	3.79	3.00	10
Unclear and incomplete project brief.	4.19	2.99	11
No or Improper feasibility studies.	4.20	2.94	12
Lack of understanding of the client's functionality by both the client and the designer.	4.31	2.93	13
Brief information is still being given during later design and construction stages.	4.37	2.93	14
Project life cycle and procurement processes not considered or fully understood by stakeholders.	3.69	2.87	15
Restricted design fees.	3.05	2.78	16
Responding to political pressures.	3.38	2.78	17
Uncoordinated and incorrect construction documents.	4.45	2.77	18
Lack of regulatory and incomplete up-dating on progress made per project phase.	4.34	2.77	19
Lack of understanding different users' culture and traditions.	3.87	2.70	20
Lack of information provision by PM in issuing thereof.	4.57	2.68	21
Meeting new technology changes.	3.78	2.68	22
Initiating value engineering changes after completion of the planning.	4.20	2.66	23
Lack of functional, aesthetic, safety requirements and constructability.	3.81	2.64	24
Lack of conceptualisation of design by the PM.	3.67	2.61	25
Lack of consideration of environmental requirements.	3.42	2.56	26
Designers ignore the client role and behave unilaterally.	4.23	2.52	27
Eliminate proven poor quality materials and equipment.	3.63	2.44	28
Materials are no longer available in market and use better substitute materials.	3.07	2.26	29
Changing government regulation and codes.	3.21	1.91	30
Mean MS	3.99	2.84	

Then ratings resulted in a mean MS 2.84, ten of the thirty (30%), achieved MSs ≥ 3.00 which include: stakeholder changing project requirements and have second thoughts at later stages (3.46); clients / end users exaggerate their needs (3.34); lack of information provision by the client or delay

in issuing thereof (3.25); upgrade / increasing project facilities (3.25); project end user appears at later stages of the project (3.20); lack of design experience of the consultant team (3.13); project end users are not involved in the briefing and planning process (3.09); improper communication between the client and the design team (3.07); lack of presentation and visualisation of designs by consultants (3.07), and the lack of communication and co-ordination between government authorities and design firms over planning and approvals (3.00).

Question 5: To what extent does an inadequate project brief contribute to client dissatisfaction?

Table 4.2.5 illustrates the extent to which an inadequate project brief contribute to client dissatisfaction in terms of MSs based upon responses to a scale of 1 (none) to 5 (major). The rating of importance resulted in a mean MS of 4.59. It is notable that all the MSs achieved are > 4.00, which implies that inadequate project briefs contribute substantially to client dissatisfaction.

Table 4.2.5: The extent to which inadequate project briefings lead to client dissatisfaction (n = 97)

Respondents	MSs	n	SD
Consultants	4.43	37	0.50
PMs	4.65	37	0.48
Key NDPW staff	4.77	13	0.44
Clients	4.70	10	0.48
Mean MS	4.59	97	0.49

Table 4.2.6 reflects the respective respondents views that illustrates that inadequate project briefs either have a substantial (41.2%) or a major impact (58.8%) on the level of project success and client satisfaction achieved upon completion of the projects. Not one respondent indicated that a poor project brief would either have no, little or a moderate impact on client satisfaction.

Table 4.2.6: The level of impact inadequate project briefings have on the level of client dissatisfaction (n = 97)

Respondents	Level of impact		n
	Substantial	Major	
Clients	3	7	10
Consultants	21	16	37
Key NDPW staff	3	10	13
PMs	13	24	37
All groups	40	57	97
Percentage	41.2	58.8	100

Question 6: To what extent must the NDPW's project briefings be improved?

Table 4.2.7 illustrates the extent to which the NDPW's project briefings have to be improved in terms of MSs based upon responses to a scale of 1 (none) to 5 (major). The rating of the extent of improvement required resulted in a mean MS of 3.14. It is notable that all the MSs are > 3.00, which implies that the NDPW's project briefings should be improved.

Table 4.2.7: The level of impact inadequate project briefings have on the level of client dissatisfaction (n = 84)

Respondents	MSs	n	SD
Consultants	3.03	37	1.17
PMs	3.27	37	0.84
Clients	3.10	10	0.99
Mean MS	3.14	84	1.01

Table 4.2.8 illustrates that 3.6% of the respondents were of the opinion that no improvement to project briefings are required, 21.4% indicated that very little improvement is required, 44.2% moderate improvement, 19.1% substantial improvement, while 11.9% indicated that the NDPW requires major improvement to its project briefings in order to improve on the success rate of their projects.

Table 4.2.8: The required level of improvement to projects briefings as rated by the respective respondent groups (n = 84)

Groups	Level of improvement required					n
	None	Very little	Moderate	Substantial	Major	
Clients	0	3	4	2	1	10
Consultants	3	10	12	7	5	37
PMs	0	5	21	7	4	37
All groups	3	18	37	16	10	84
Percentage	3.6	21.4	44.1	19.1	11.9	100.0

The variance in the findings is attributed to the nature and the magnitude of the projects, its complexities involved as well as the experience and real project exposure of the respective respondents. Interviews also revealed that project briefings of the more senior PMs in terms of tenure are generally more comprehensive than the briefings of the more junior PMs. The same applies to the other role players, especially the clients. The problem is that the more senior and knowledgeable representatives of all the role players do not always attend the briefing and planning meetings due to being over committed elsewhere.

Question 7: In terms of managing projects by the NDPW PMs, which are the most common causes of project failure that have major impact in achieving project success?

The frequency of occurrence of the most common causes of project management failure on the NDPW's projects are ranked in order of their frequency of occurrence (mean MS 2.79) relative to the importance (mean MS 4.27) to address such causes in order to achieve project management success (Table 4.2.9).

Table 4.2.9 illustrates the frequency of occurrence of the most common causes of project failure on the NDPW's projects in terms MSs based upon responses to a scale of 1 (very seldom) to 5 (always). The ratings of the frequency of occurrence resulted in a mean MS of 2.79. The four of the fifteen (26.7%) common causes of project failure that achieved MSs > 3.00, which are most often present are: the failure to identify key assumptions of the clients (3.11); the lack of effective communication at all levels (3.10); inaccurate time and cost estimates (3.06), and the lack of detailed bid documentation and specifications (3.02).

Table 4.2.9: The frequency of occurrence of the most common causes of project failure in relation the level of importance to achieve project management success (n = 117)

Drivers to change	MS (Import)	MS (Freq)	Rank
Failure to identify key assumptions.	4.25	3.11	1
Lack of effective communication at all levels.	4.48	3.10	2
Inaccurate time and cost estimates.	4.23	3.06	3
Lack of detailed bid documentation and specifications.	4.26	3.02	4
Inadequate risk management.	4.12	2.91	5
PMs who lack experience and training.	4.36	2.85	6
PMs not applying sound project management methods and strategies.	4.15	2.80	7
Lack of detail project plans regarding cost, quality control, and H&S.	4.34	2.79	8
Failure to track progress and report back timely.	4.21	2.77	9
Poor management of both client and the NDPW's expectations.	4.35	2.69	10
Failure to track project requirements.	4.13	2.64	11
Ineffective project leadership.	4.44	2.63	12
Inadequate involvement of PM's supervisor.	3.91	2.61	13
Poorly defined project scope.	4.50	2.59	14
Unable to manage cultural differences in project teams.	4.25	2.29	15
Mean MS	4.27	2.79	

Other common causes of project failure include: inadequate risk management (2.91); PMs who lack experience and training (2.85); PMs not applying sound project management methods and

strategies (2.80); the lack of detail in the project plans in terms of cost and quality control, environmental management, and H&S (2.79); failure to track progress and report back timely (2.77), and poor management of both client and the NDPW's expectations (2.69). All of which culminate in project failure and major client dissatisfaction.

Table 4.2.9 also illustrates the importance to address the common causes of project failure to achieve project success, in terms of MSs based upon responses to a scale of 1 (unimportant) to 5 (very important). The rating of importance resulted in a mean MS of 4.27, and all fifteen (100%) achieved $MSs \geq 3.91 \leq 4.50$. This implies that addressing the causes of project failure is deemed to be important to very important to achieve project success. The five most important contributions include: poorly defined project scope (4.50); lack of effective communication at all levels (4.48); ineffective project leadership (4.44); PMs who lack experience and training (4.36), and the poor management of both client and the NDPW's expectations (4.35).

The frequency of occurrence of the common causes of project failure is found to be less on more experienced PMs' projects that have developed their abilities to management projects well.

Question 8: In terms of implementing projects, which are the most common causes of project failure that have the highest impact on achieving project success?

The overall responsibilities of the NDPW and their clients are highlighted in Table 4.2.10. The NDPW is responsible for managing the procurement process by designating a suitable PM, appointing suitably qualified and experienced consultants to do the planning, and contractors execute the works. The client on the other hand is responsible for funding Capital Works projects, approval of concept designs and issuing revised needs assessments when the scope of work is changed. The client must also assign knowledgeable representatives to attend project briefing and planning meetings as well as site meetings during the construction period up to final completion and closing out of the project thereby ensuring that their needs and standards are met. However, it is notable from Table 4.2.10 that both the NDPW and the client are not successful in fulfilling their respective responsibilities.

Table 4.2.10 illustrates the frequency of occurrence of common causes of project failure in terms of MSs based upon responses to a scale of 1 (very seldom) to 5 (always). The rating of the frequency of occurrence resulted in a mean MS of 3.37. The causes are deemed to be present often to very often as fourteen of the fifteen causes (93.3%) achieved $MSs \geq 3.00 \leq 4.09$.

Table 4.2.10: The frequency of occurrence of the most common causes of project failure that have the highest impact on achieving project success (n = 117)

Criteria	MS (Impact)	MS (Freq)	Rank
Delay in obtaining Heritage approval when working on heritage buildings.	4.17	4.09	1
Time delays in procuring the services of a suitable contractor.	4.27	3.85	2
Delay in closing out projects once practical completion has been taken.	4.30	3.58	3
Constant scope changes by client.	4.26	3.55	4
Delay in approval of concept designs by clients.	4.21	3.48	5
Client representative's project knowledge doesn't match what is required on the project.	4.23	3.36	6
Inadequate project management capabilities of the appointed contractor.	4.34	3.33	7
Appointed contractor's contract administration capabilities are limited.	4.35	3.31	8
Too much reworks on projects.	4.28	3.30	9
Appointed contractor's knowledge base is insufficient.	4.45	3.30	10
Insufficient funding for project implementation.	4.26	3.29	11
Poor management of subcontractors by appointed main contractors.	4.38	3.11	12
Professional team's capabilities do not match what is required on a specific project.	4.26	3.00	13
All members of professional team are not suitably qualified.	4.29	3.00	14
Delay in approval of sketch plans.	4.11	2.96	15
Mean MS	4.28	3.37	

The ten most common causes of project failure on NDPW projects are: delays in obtaining Heritage Council's approval when working on heritage buildings (4.09); time delays in procuring the services of a suitable contractor (3.85); delay in closing out projects once practical completion has been taken (3.58); constant scope changes by client (3.55); delay in approval of concept designs by clients and issuing revised needs assessments (3.48); client representative's project knowledge doesn't match what is required on the project (3.36); inadequate project management capabilities of the appointed contractor, appointed contractor's contract administration capabilities are limited (3.31); too much reworks on projects (3.30), and appointed contractor's knowledge base is insufficient (3.30).

Table 4.2.10 illustrates the causes of project failure that have the highest impact on achieving project success and client satisfaction in terms of MSs based upon responses to a scale of 1 (no impact) to 5 (severe impact) that achieved $MSs \geq 4.11 \leq 4.45$. The rating of the level of impact resulted in a mean

MS of 4.28, and fifteen of the fifteen (100%) of the causes are deemed to have a high impact on achieving project success and client satisfaction.

The ten causes with the highest level of impact on achieving project success and client satisfaction include: the appointed contractor's knowledge base is insufficient (4.45); poor management of subcontractors by appointed main contractors (4.38); the appointed contractor's contract administration capabilities are limited (4.35); inadequate project management capabilities of the appointed contractor (4.34); delay in closing out projects once practical completion has been taken (4.30); all members of professional team are not suitably qualified (4.29); too much rework on projects (4.28); time delays in procuring the services of a suitable contractor (4.27); constant scope changes by client (4.26), and the professional team's capabilities do not match what is required on a specific project (4.26).

Question 9: How important is the client's contribution towards achieving project success?

Table 4.2.11 illustrates the client's level of contribution toward achieving project success in terms of MSs based upon responses to a scale of 1 (totally inadequate) to 5 (very good). The rating of the client's contributions resulted in a mean MS of 2.40, and fifteen of the fifteen (100%) of the contributions achieved $MSs \geq 2.07 \leq 2.80$.

The ten most inadequate client contributions toward achieving project success include: client representatives attending meetings do not have the delegated authority for decision-making (2.07); turnaround time in obtaining client feedback on queries raised during phases is too long. (2.15); client's awareness and concern about H&S on projects is often seen as an unnecessary cost (2.18); client representatives' attending meetings are not able to contribute constructively (2.22); client's do not support the incorporation of training on projects such as the EPWP and the NYS training and employment initiatives of the government, and regard it as unnecessary cost and fruitless expenditure due to the fact that the real purpose of skills transfer and upliftment do not materialise (2.33); client representative's do generally not grasp the importance of project milestone dates (2.36); client representatives do generally not have sufficient knowledge of their own accommodation needs and standards (2.40); scheduled site meetings are often not attended by client representatives, but when attended it is found that the client representatives are not suitably qualified, competent nor well informed of their own requirements (2.43); planning meetings are not attended on a regular basis, but when attended it is found that the client representatives are not by suitably qualified and competent (2.46), and

site hand over meetings are not always attended by suitably qualified and competent client representatives (2.48).

Table 4.2.11: The Clients' level of contribution toward achieving project success relating to its level of importance to achieve project success (n = 117)

Key client contributions	MS (Imp)	MS (Clients)	Rank
Client representatives attending meetings have the delegated authority for decision-making.	4.44	2.07	1
Turnaround time in obtaining client feedback on queries rose during phases.	4.55	2.15	2
Client's awareness and concern about health and safety on projects.	4.35	2.18	3
Ability of client representatives attending meetings to contribute constructively.	4.42	2.22	4
Client support of technical training on projects in terms of skills transfer via EPWP and the NYS.	4.26	2.33	5
Client representative's awareness and importance of project milestone dates.	4.19	2.36	6
Requirement of the client to be knowledgeable and well informed of their accommodation needs and standards.	4.39	2.40	7
Attend scheduled site meetings by competent and well informed client representative.	4.32	2.43	8
Attend planning meetings by suitably qualified and competent client representative.	4.50	2.46	9
Attend site hand over meetings by suitably qualified and competent client representative.	4.21	2.48	10
Attend briefing meeting by suitably qualified and competent client representative.	4.38	2.50	11
Client understanding project management methodology and project phases.	4.23	2.51	12
Client's awareness and level of understanding of the procurement procedures.	3.97	2.54	13
Client being aware of their own responsibilities toward the project.	4.23	2.56	14
Attend pre-tender site meeting by suitably qualified and competent client representative.	3.57	2.80	15
Mean MS	4.27	2.40	

It is also notable from Table 4.2.11 that generally, the clients' level of contribution diminishes as the level of importance (impact) increases, e.g. the impact of client representatives attending meetings not having the delegated authority for decision-making is high (4.44) and the turnaround time in obtaining client feedback on queries raised during the various project phases has a severe impact (4.55) while their level of contribution is viewed to be inadequate (2.07 and 2.15 respectively).

On the other hand, attending pre-tender site meetings by a suitably qualified and competent client representative is deemed to have a moderate impact (3.57), and the client being aware of their own responsibilities toward the project (4.23) while their level of contribution is adequate (2.80 and 2.56 respectively). This phenomenon is attributed to the fact that the clients have capacity problems in terms of both the number and / or suitably qualified and experienced personnel who are able to add real value when attending meetings.

It became apparent during interviews with respondents that client representatives attending project meetings generally do not have the delegated authority to take decisions and are not able to participate constructively. Hence the tendency to only attend meetings and get involved where very little input or commitments are required from their side. Client representatives have the tendency to avoid complex meetings and / or discussions and generally stop attending such meetings once complex issues are directed to those representatives.

Client representatives also tend to avoid briefing or planning meetings where they are expected to contribute constructively thereby avoiding responsibility. Poor client representation inevitably leads to delays in completing the planning with the added consequences of scope changes during the construction phase of the project and ultimately client dissatisfaction although the PM is held accountable.

Interviews further revealed that key client representatives such as persons who will be signing off the handing over certificates on behalf of the client, tend only to visit the construction sites when the project is either nearing completion, or on the day of practical completion. Inevitably the client is not happy with certain deliverables, as firstly the clients felt they were not consulted when certain decisions were taken, and secondly that were not informed with respect to developments on site even though the site meeting minutes are distributed and the clients have an open invitation to attend all site meetings.

The level of client contribution is found lacking on all fifteen briefing elements (100%) which achieved a mean MS of 2.40 relative to the level of importance to achieve project success that achieved a mean MS of 4.27. The clients' contributions toward achieving project success are thus deemed to be inadequate which implies that the clients themselves in fact contribute to project failure, i.e. the poor project success rate of the NDPW.

Question 10: Do clients rely too much on the expertise of the departmental PM?

The respective respondent group ratings of the extent to which the client relies too much on the expertise of the PM is replicated in Table 4.2.12 where it is considered to be very often (mean MS of 3.77), which achieved MSs $\geq 3.51 \leq 3.97$.

The PMs' rating is the highest at 3.97 which is attributed to the fact that the consultant teams and the contractors rely on the PM to give guidance in terms of functionality, corporate requirements and standards in the absence of appropriate client representation. The project is then doomed to fail if the PM does not have the technical knowledge and experience as decisions are made, only to be rejected by a different client representative once completed. The ratings of the respective respondent groups align very well with each other.

Table 4.2.12: The extent to which clients rely on the expertise of the NDPW's PMs (n = 117)

Groups	MSs	n	SD
Consultants	3.51	37	0.61
PMs	3.97	37	0.73
Key NDPW staff	3.85	13	0.99
Contractors	3.85	20	0.37
Clients	3.70	10	0.48
Mean MS	3.77	117	0.67

Cognisance must also be taken of the fact that the NDPW acts as the implementing agent on behalf of the clients. Hence, the clients' expectations that the NDPW PMs should be totally *au fait* with the project implementation processes and all the clients' requirements to implement projects effectively and efficiently in all respects. Clients also expect the PMs to be fully informed with regards to their accommodation needs, requirements, and standards.

Question 11: Do the PMs' capabilities match what is required on the specific project?

Table 4.2.13 illustrates the degree to which the NDPW PMs' capabilities match what is required on projects in terms of responses to a scale of 1 (never) to 5 (always). The respective respondent groups' MSs ranged from 2.97 to 3.10 with a mean MS of 3.16 which implies that PMs' capabilities often fulfil what is required on the specific projects.

However, it is notable that the PMs' rating is the highest at 3.73 while the key NDPW staff rated it the lowest at 2.54 which is attributed to the fact that the key NDPW staff, although not directly involved with the actual implementation of projects on site, are directly involved with

the budgeting, programming, cash flows, and administration of extending financial tender dates, extension of time claims and variation orders which gives them total insight as to what is actually happening on the projects. This includes delays in completing the planning, invitation of bids, or even poor performance by consultants and / or the contractors.

Table 4.2.13: The degree to which PMs' capabilities match what is required on specific projects (n = 117)

Respondent groups	MSs	n	SD
Consultants	2.97	37	0.73
PMs	3.73	37	0.69
Key NDPW staff	2.54	13	0.66
Contractors	2.90	20	0.85
Clients	3.10	10	0.57
Mean MS	3.16	117	0.82

Interviews affirmed that the assessment of the key NDPW staff appears to be more realistic as the key NDPW staff are directly involved in managing the project planning and construction programme that gives them in depth knowledge of the manner in which all the PMs manage their individual portfolio of projects. This implies that the PMs' abilities match the requirements of the designated projects to a lesser extent that what is portrayed by the mean MS of 3.16. Projects are doomed to fail if the PM does not have the technical knowledge and experience to match the complexity of the project.

Interviewees argued that the poor performance of the PMs is attributed to the fact that the NDPW has lost vast expertise where professionals and PMs have left the department over the last 10 to 15 years which is worsened by the appointment of unsuitably qualified and / or inexperienced PMs who are not getting proper guidance and training. The fact is that a very few suitably qualified and experienced PMs have remained in the NDPW, who are generally appointed as Chief Construction PMs (CCPMs) who apart from managing their own projects, also supervises 3 to 4 PMs and also has added managerial responsibilities such as programme management; sectional budgets and audit queries. This effectively means that the CCPMs do not have sufficient time to spend with their subordinate PMs to transfer skills and knowledge, ensuring that projects are managed both effectively and efficiently. Projects then tend to be managed reactively rather than pro-actively which inevitably leads to project failure and client dissatisfaction.

Question 12: What are the negative implications of mismatching the departmental PM?

The frequency of occurrence of the negative implications of mismatching PMs are illustrated in Table 4.2.14 in terms MSs based upon responses to a scale of 1 (very seldom) to 5 (always). The rating of the frequency of mismatching PMS resulted in a mean MS of 2.97, and four of the ten (40%) most frequent negative effects of mismatching PMs achieved $MSs \geq 3.06 \leq 3.35$. The five most frequent negative implications of mismatching PMs to projects within the NDPW are: excessive cost, time, and quality slippages (3.35); time delay in decision making (3.15); incomplete or poor reporting (3.13); poor time forecasting (3.06), and improper project briefings (2.93).

Table 4.2.14 further illustrates the level of importance to match PMs relative to the negative implications of mismatching PMs, in terms of MSs based upon responses to a scale of 1 (unimportant) to 5 (very important). The rating of the importance to match PMS resulted in a mean MS of 4.41, and ten of the ten rudiments (100%) achieved $MSs \geq 4.12 \leq 4.62$. The five most important negative implications of mismatching PMs that must be mitigated are: inaccurate budget cash flows (4.62); excessive cost, time, and quality slippages (4.57); time delay in decision making (4.53); lack of control over the professional team (4.52), and poor time scheduling and forecasting (4.46).

Table 4.2.14: The negative implications of mismatching PMs relative to the level of importance and the frequency of occurrence (n = 117)

Negative implications of mismatching PMs	MS (Imp)	MS (Freq)	Rank
Excessive cost, time, and quality slippages.	4.57	3.35	1
Time delay in decision making.	4.53	3.15	2
Incomplete or poor reporting.	4.24	3.13	3
Poor time scheduling and forecasting.	4.46	3.06	4
Improper briefing.	4.40	2.93	5
Client leading the PM and taking advantage.	4.12	2.93	6
Poor communication.	4.28	2.88	7
Inaccurate budget cash flows.	4.62	2.86	8
Lack of control over the professional team.	4.52	2.79	9
Lack of clear direction and objectives of the project.	4.32	2.65	10
Mean MS	4.41	2.97	

Table 4.2.15 illustrates that the mean MS of the consultants (2.71) and the PMs (2.76) are substantially lower than that of the key NDPW staff (3.19), the contractors (3.44) and the clients

(3.50) as the latter three respondent groups are of the opinion that PMs are often mismatched (mean MSs > 3.00).

Table 4.2.15: The MSs of the negative implications of mismatching PMs to projects (n = 117)

Mean MSs					
All groups	Consultants	PMs	Key NDPW staff	Contractors	Clients
2.97	2.71	2.76	3.19	3.44	3.50

Interviews revealed that the lower mean MSs of the PMs and the consultants can be attributed to the fact that there are grey areas when managing projects in terms of whom exactly is responsible for what between the PM, the principal agent, the rest of the consultant team as well as the client. The PMs leave certain procedures for the principal agents and *vice versa*. Both respondent groups are of the opinion that it is the others responsibility to address the issue at hand and do necessary follow-ups or coordination. It is also apparent from interviews that inexperienced PMs tend to sit back and leave everything in the principal agent's hands, irrespective whether the principal agent is capable or not. However, experienced and competent PMs will ensure that all role players are aware of their respective roles and responsibilities, and will hold them to it.

Question 13: Which of the following activities are being performed by departmental PMs?

Table 4.2.16 illustrates the frequency of performing key activities of project management by the PMs in terms of MSs based upon responses to a scale of 1 (never) to 5 (very often). The rating of the frequency of performing key POM activities resulted in a mean MS of 3.38. The activities are deemed to be performed seldom given that twelve out of fifteen activities (80%) achieved MSs of ≥ 3.00 and ≤ 3.87 . The remaining three activities achieved MSs $\geq 2.82 \leq 2.99$, which implies that they are very seldom performed. The 5 most frequently performed activities, although seldom performed, include: monitoring and reporting progress (3.87); formulate and compile relevant project documentation (3.85); accurate cost estimating and interpretation of project estimates (3.78); developing a budget in consultation with the consultant team (3.73), and accurate time estimating and interpretation of planning schedules (3.73).

Table 4.2.16 illustrates the extent to which the NDPW PMs are able to perform the key project management activities when the PMs actually do perform the activities, in terms of MSs based on responses to a scale of 1 (completely inadequate – not able at all) to 5 (mastered role – in

depth capabilities). The rating of the PMs' performance resulted in a mean MS of 3.00. Seven of the fifteen (46.7%) activities achieved MSs > 3.00 which implies that it is performed adequately where the PMs have average capabilities. The remaining eight of the fifteen (53.3%) activities are deemed to be performed inadequately where the PMs have basic capabilities achieved MSs $>2.00 \leq 3.00$). The six activities performed inadequately with MSs < 3.00 include: creating bar-charts (2.59); interpreting progress bar-charts (2.72); managing risks and related issues that could delay progress (2.81); undertaking benefits realisation analysis of project also referred to as a cost benefit analysis (2.86); active participation at all meetings and providing constructive feedback (2.95), and effective planning and managing supply chain management procedures effectively (2.97).

Table 4.2.16: The extent to which key activities are being performed by PMs to improve their performance relative to the frequency of occurrence (n = 97)

Key activities performed by PMs to improve performance	MS (Perform)	MS (Freq)	Rank
Monitoring and reporting progress.	3.24	3.87	1
Formulate and compile relevant project documentation.	3.16	3.85	2
Accurate cost estimating and interpretation of project estimates.	3.07	3.78	3
Developing a budget in consultation with the consultant team.	3.05	3.73	4
Accurate time estimating and interpretation of planning schedules.	3.14	3.73	5
Effective planning and managing supply chain management procedures.	2.97	3.68	6
Active participation in planning and defining scope of the project.	3.38	3.56	7
Active participation at all meetings and providing constructive feedback.	2.95	3.45	8
Controlling quality.	3.13	3.33	9
Managing risks and related issues that could delay progress.	2.81	3.09	10
Undertaking benefits realisation analysis of project.	2.86	3.02	11
Play leading role in project risk analysis.	3.00	3.00	12
Strategic influencing the project stakeholders to attain project objectives.	2.98	2.99	13
Interpreting Bar-Charts.	2.72	2.85	14
Creating Bar-Charts.	2.59	2.82	15
Mean MS	3.00	3.38	

Interviews also revealed that one of the main reasons why PMs fail to carry out the listed activities with due diligence is because the PMs rely too much on the consultants' thoroughness of the planning, estimating, compile documentation and reporting on their behalf, and the fact that projects are not evaluated in detail. PMs tend not to be constructively involved in the various processes. This culminates into a situation where most of the PMs cannot comprehend

and interpret the information provided to them. The majority of the PMs are not totally *au fait* with what is really expected of them, nor are the majority not suitably qualified and / or experienced, hence the saying: “they do not understand what they are doing.”

The mean MS of 3.38 implies that the majority of the PMs have average capabilities while an organisation of the NDPW’s tenure should have PMs of whom the majority should have in depth capabilities, and have mastered the role of PMs.

The NDPW adopted project management principals and implemented project management in 1995 to improve service delivery. However, interviews attested to the fact that service delivery has worsened over the last seventeen years (1995 to 2012), which is affirmed by the fact that the NDPW’s clients are looking for alternative ways to source accommodation, either by leasing or taking over the NDPW’s role as project implementing agents themselves. The SAPS, one of the NDPW’s biggest clients actually started procuring their own office accommodation in 2006, and are further devolving their reliance on the NDPW. Furthermore, more and more clients wish to follow suit.

Question 14: Which of the following qualities do departmental PMs portray?

Table 4.2.17 illustrates the extent to which PMs portray key PM qualities in terms of responses to a scale of MSs based upon responses to a scale of 1 (totally inadequate – not able at all) to 5 (mastered role – in-depth knowledge). The rating of the portraying of PM quality traits resulted in a mean MS of 3.21, and ten of the ten qualities (100%) achieved MSs of $\geq 3.03 \leq 3.87$ and thus deemed to be portrayed adequately with average capabilities.

The five most frequently portrayed quality traits include: empathy – it is nice when a project leader acknowledges that people have a life outside of work (3.48); the PM inspires a shared vision of where to go to and the ability to articulate it (3.30); ability to delegate tasks – PMs demonstrate their trust in others through their actions; how much they check and control their work, how much the PMs delegate and to what extent people are allowed to participate (3.30); enthusiasm - enthusiastic leaders are committed to their goals and express this commitment through optimism (3.24), and integrity - good leadership demands commitment to, and demonstration of, ethical practices and ‘walk the talk’ (3.20).

Table 4.2.17 also illustrates the importance to portray PM qualities in terms of MSs based upon responses to a scale of 1 (unimportant) to 5 (very important). The rating of the importance to

portray PM qualities resulted in a mean MS of 4.4, and ten of the ten MSs $\geq 4.34 \leq 4.49$. This implies that it is important for the NDPW PMs to develop and portray all the required qualities of PMs.

Table 4.2.17: Qualities that PMs portray ranked in order of the current level of performance and capabilities in relation to its importance (n = 117)

Key PM qualities portrayed by PMs	MS (Imp)	MS (Perform)	Rank
Empathy - "It is nice when a project leader acknowledges that people have a life outside of work."	4.34	3.48	1
Inspires a shared vision of where to go to and the ability to articulate it.	4.38	3.30	2
Ability to Delegate Tasks – PMs demonstrate their trust in others through their actions; how much they check and control their work, how much the PMs delegate and to what extent people are allowed to participate how.	4.37	3.30	3
Enthusiasm - Enthusiastic leaders are committed to their goals and express this commitment through optimism.	4.40	3.24	4
Integrity - Good leadership demands commitment to, and demonstration of, ethical practices - walk the talk.	4.43	3.20	5
Leadership competence - The ability to challenge, inspire, enable, model and encourage must be demonstrated if leaders are to be seen as capable and competent.	4.49	3.19	6
Good communicator - Project leadership calls for clear communication about goals, responsibility, performance, expectations and feedback.	4.44	3.16	7
Team-Building Skills – The team leader must know the appropriate leadership style to use during each stage of team development. The leader must also have an understanding of the different team players styles and how to capitalise on each at the proper time, for the problem at hand.	4.37	3.10	8
Problem Solving Skills - Although an effective leader is said to share problem-solving responsibilities with the team, it is expected from project leaders to have excellent problem-solving skills themselves.	4.44	3.09	9
Cool Under Pressure - When PMs (leaders) encounter a stressful event, is it considered interesting, do the PMs feel that they can influence the outcome, or it seen as an opportunity?	4.34	3.03	10
Mean MS	4.40	3.21	

The five most important quality traits which PMs should portray include: leadership competencies - the ability to challenge, inspire, enable, model and encourage must be demonstrated if leaders are to be seen as capable and competent (4.49); good communication - project leadership calls for clear communication about goals, responsibility, performance, expectations and feedback (4.44); problem solving skills - although an effective leader is said to share problem-solving responsibilities with the team, it is expected from project leaders to have excellent problem-solving skills themselves (4.44); integrity - good leadership demands

commitment to, and demonstration of, ethical practices and ‘walk the talk’ (4.43), and enthusiasm - enthusiastic leaders are committed to their goals and express this commitment through optimism (4.40). It is however notable that PMs portray ‘less trivial’ qualities more adequately while portraying ‘more important’ qualities less adequately.

Figure 4.2.1 reflects the qualities that PMs should portray in relation to their current level of performance and capabilities. The disparity between the level of performance and level of importance is evident which implies that majority of the PMs of the NDPW do not portray the qualities to the extent that a PM should portray, specifically when considering the tenure of the NDPW as an implementing agent.

Figure 4.2.1: Qualities portrayed by the NDPW PMs relative to their level of importance (n = 117)

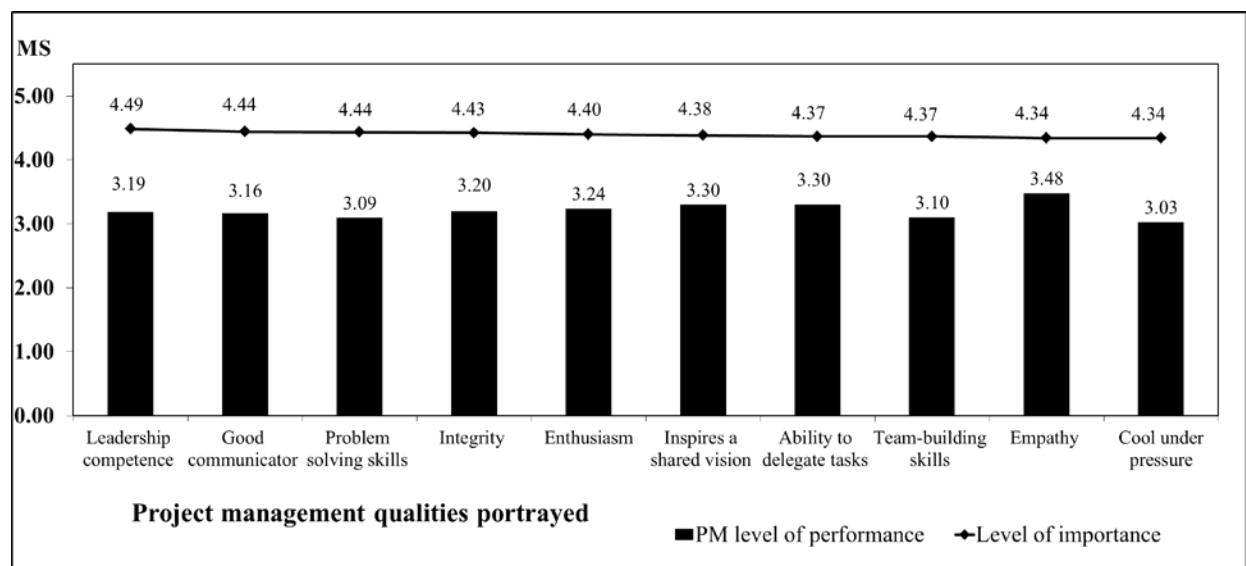


Table 4.2.18 represents the various respondent groups’ ratings of the PMs’ qualities portrayed. Note that the key NDPW staff was rated the lowest (2.30) followed by the contractors (2.82) and the clients (2.89). The consultants rated the highest at 3.56 and the PMs at 3.47, while the mean MS for all groups was 3.21 (average capabilities).

Table 4.2.18: The extent to which PMs portray key qualities to be successful as gauged by the respective respondent groups (n = 117)

Mean MSs					
All groups	Consultants	PMs	Key NDPW staff	Contractors	Clients
3.21	3.56	3.47	2.30	2.82	2.89

The low mean MS of the key NDPW staff (2.30) is attributed to the fact that they are familiar with the happenings of all the PMs' projects in terms of contract administration, updating of systems and reporting on their respective project portfolios. The key staff members are fully aware as to what the PMs' responsibilities are versus their actual achievements whereas the contractors, clients and consultants may not be privileged to the information that they have. This implies that the mean MS of 3.21 should in effect be lower and could thus be considered to be performed inadequately as derived from the various interviews, intervention meetings, and workshops held.

Question 15: Do departmental PMs take time to foster key project management?

Table 4.2.19 illustrates the extent to which PMs take time to foster and develop key project management skills in terms of MSs based upon responses to a scale of 1 (totally inadequate – not able at all) to 5 (mastered role – in-depth knowledge). The ratings of developing key PM skills resulted in a mean MS of 3.02. The skills are deemed to be developed inadequately with basic capabilities given that six out of the seven (85.7%) of the project management skills achieved MSs of ≥ 2.70 and ≤ 2.95 . One key skill (14.3%) achieved a MS of 3.86 which is PMs having empathy were it is admitted that it is nice when a project leader acknowledges that the project team has a life outside of work.

The five least frequently fostered project management skills are: developing the gift of foresight - making reasonable predictions based on practical assumptions (2.70); become more organised and detail-oriented (2.87); PM's ability to handle conflict, disputes and resolve issues immediately (2.87); pragmatism – ability to apply common sense to resolve problems (2.93), and the ability to lead by applying appropriate people skills depending on the situation (2.93).

Table 4.2.19 illustrates the importance of fostering key PM skills in terms of MSs based upon responses to a scale of 1 (unimportant) to 5 (very important). The rating of importance to develop PM skills resulted in a mean MS of 4.36, and all seven skills (100%) achieved MSs $\geq 4.30 \leq 4.40$. It is thus deemed important for PMs to develop and foster the required project management skills. The five most important skills which PMs should develop are: pragmatism – ability to apply common sense to resolve problems (4.40); become more organised and detail-oriented (4.39); PM's ability to handle conflict, disputes and resolve issues immediately (4.39); exceptional communication skills in different terms – different horses for different courses (4.36), and the ability to lead by applying appropriate people skills depending on the situation (4.33).

Table 4.2.19: The fostering of project management skills ranked in order of the PMs' performance relative to its level of importance (n = 117)

Project management skills	MS (Imp)	MS (Perform)	Rank
Develop the gift of foresight - making reasonable predictions based on practical assumptions.	4.31	2.70	1
Become more organised and detail-oriented.	4.39	2.87	2
PM's ability to handle conflict, disputes and resolve issues immediately.	4.39	2.87	3
Pragmatism – ability to apply common sense to resolve problems.	4.40	2.93	4
The ability to lead by applying appropriate people skills depending on the situation.	4.33	2.93	5
Exceptional communication skills in different terms – different horses for different courses.	4.36	2.95	6
Empathy – It is nice when a project leader acknowledges that people have a life outside of work.	4.30	3.86	7
Mean MS	4.36	3.02	

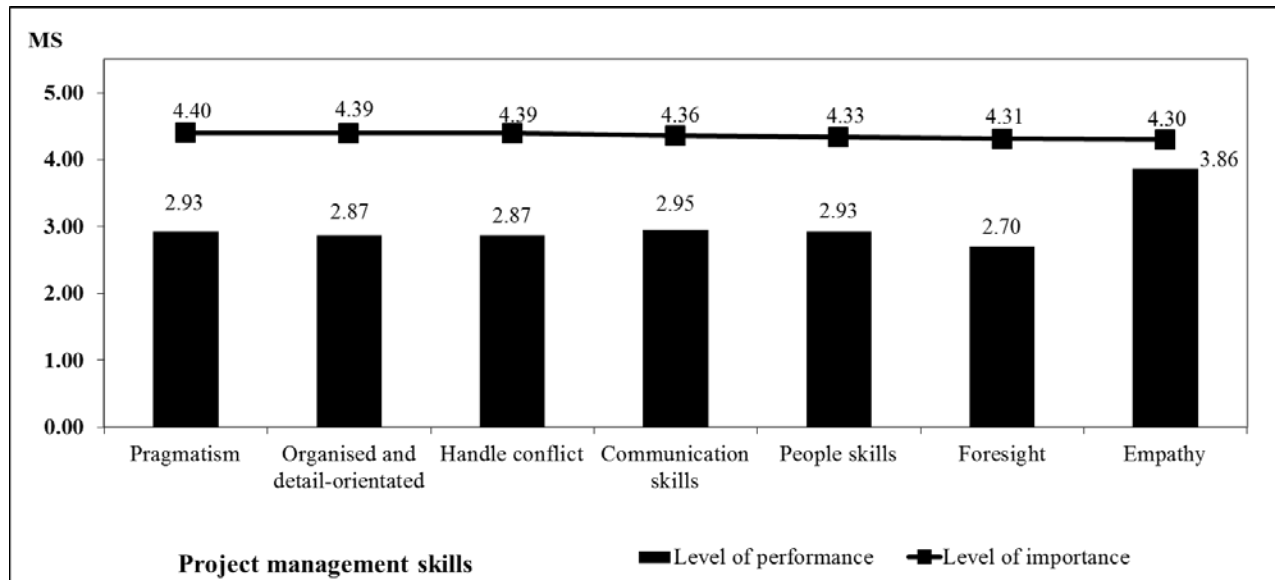
Table 4.2.20 illustrates the respective respondent group's mean MSs in terms of the extent to which the NDPW PMs have developed project management skills. The low mean MS of the key NDPW staff (2.09) is attributed to the fact that they are familiar with the endeavours of all the PMs as to how projects are managed in terms of contract administration, updating of systems and reporting on their respective project portfolios. The key staff members are fully aware as to what the PMs' responsibilities are relative to their actual achievements whereas the contractors, clients and consultants may not be privileged to the information that they have.

Table 4.2.20: The extent to which the NDPW PMs foster project management skills to become successful in managing projects as rated by the respective respondent groups (n = 117)

Mean MSs					
All groups	Consultants	PMs	Key NDPW staff	Contractors	Clients
3.02	3.50	2.94	2.09	2.96	2.84

Figure 4.2.2 illustrates the degree to which PMs take the time to foster and develop skills to be more successful in managing projects relative to its level of importance. The variance between the PMs' level of performance and level of importance is evident from Figure 4.2.2 which implies that majority of the PMs of the NDPW have not developed the skills required to be more successful as PMs.

Figure 4.2.2: Fostering project management skills ranked in order of importance relative to the PMs' performance (n = 117)



Question 16: To what extent have departmental PMs developed as managers?

Table 4.2.21 illustrates the extent to which PMs have developed key traits of good managers relative to their importance in terms of successfully managing projects, in terms of MSs based upon responses to a scale of 1 (totally inadequate – not able at all) to 5 (mastered role – in-depth capabilities). The rating of PMs' managerial skills resulted in a mean MS of 2.97. Six of the ten (60%) managerial skills achieved MSs of $\geq 3.01 \leq 3.07$ and are thus deemed adequate. The remaining four (40%) managerial skills are deemed to be inadequate with basic capabilities having achieved MSs of $\geq 2.76 \leq 2.98$.

The five least frequently portrayed managerial skills are: flexibility and versatility -the pathways to speedy responsiveness (2.76); creativity of PMs - the spark that propels projects forward and that captures peoples' attention (2.77); it is the PM's commitment that pulls the team forward during trying times (2.97); the knowledge base must be so ingrained and integrated into the PM's being that they become transparent, focusing on what they need to learn and develop (2.98), and people with keen insight are often able to sense what others are feeling and thinking; consequently, they are able to respond perfectly to another through their deeper understanding (3.01).

Table 4.2.21 further illustrates the importance for PMs to develop managerial skills in terms of responses to a scale of 1 (unimportant) to 5 (very important). The rating of the development of managerial skills by PMs resulted in a mean MS of 4.21, nine out of ten (90%) of the skills achieved MSs $\geq 4.26 \leq 4.39$. The remaining one (10%) managerial skill is deemed to be moderately important having achieved MSs of 3.28.

Table 4.2.21: The extent to which PMs have developed key traits of good managers ranked in order of performance relative to their importance (n = 117)

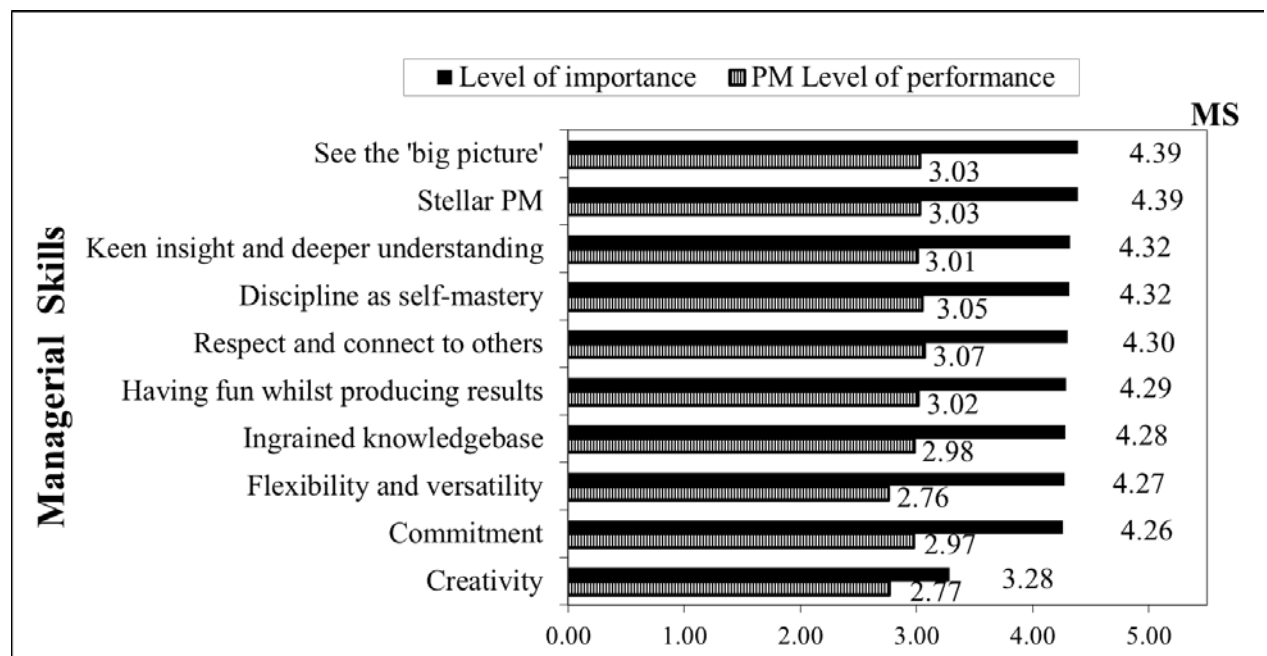
Management traits	MS (Imp)	MS (Perform)	Rank
Flexibility and versatility are the pathways to speedy responsiveness.	4.27	2.76	1
Creativity of PMs is the spark that propels projects forward and that captures peoples' attention.	3.28	2.77	2
It is the PM's commitment that pulls the team forward during trying times.	4.26	2.97	3
The knowledge base must be so ingrained and integrated into their being that they become transparent, focusing on what they need to learn and develop.	4.28	2.98	4
People with keen insight are often able to sense what others are feeling and thinking; consequently, they are able to respond perfectly to another through their deeper understanding.	4.32	3.01	5
Having fun while producing outstanding results (Lightness) complements the seriousness of the task at hand as well as the resolve of the team, therefore contributing to strong team results and retention.	4.29	3.02	6
A stellar PM knows the organisational structure, policies, rules and regulations intimately and knows how to work within such boundaries and not let the structure impinge upon the process or the project.	4.39	3.03	7
Excellent managers see the big picture while also paying attention to the smaller details of the project.	4.39	3.03	8
Discipline as self-mastery can be exhilarating whilst remaining focused on the job at hand is the ability to choose and live from what one pays attention to.	4.32	3.05	9
Managers who respect and connect with others on a human level inspire great loyalty.	4.30	3.07	10
Mean MS	4.21	2.97	

The five most important managerial skills which PMs should develop to be more successful include: being a stellar PM knows the organisational structure, policies, rules and regulations intimately and knows how to work within such boundaries and not let the structure impinge upon the process or the project (4.39); excellent managers see the big picture while also paying attention to the smaller details of the project (4.39); people with keen insight are often able to sense what others are feeling and thinking, consequently they are able to respond perfectly and quicker to another through their deeper understanding (4.32); discipline as self-mastery can be

exhilarating whilst remaining focused on the job at hand is the ability to choose and live from what one pays attention to (4.32), and managers who respect and connect with others on a human level inspire great loyalty (4.30).

Figure 4.2.3 illustrates the degree to which PMs have developed their managerial skills in relation to their level of importance. The ‘gap’ between their level of performance and level of importance is evident, which implies that the majority of the NDPW PMs have not developed the managerial skills required to be more successful as PMs.

Figure 4.2.3: The extent to which PMs have developed key traits of good managers ranked in order of importance relative to their performance (n = 117)



Question 17: Often PMs find themselves being pulled between the client, the end users, the community, the project team members and even the parent organisation including senior management. To what extent have PMs mastered the following traits?

Table 4.2.22 illustrates the extent to which PMs have mastered key project management traits in terms of MSs based upon responses to a scale of 1 (totally inadequate – not able at all) to 5 (mastered role – in-depth capabilities). The rating of the extent of mastering PM traits resulted in a mean MS of 2.92. Since six of seven traits (85.7%) achieved MSs < 3.00 varying between ≥ 2.70 and ≤ 2.98 . The remaining one trait (14.3%) is deemed to be adequate with average capabilities having achieved a MS of ≥ 3.16 . The level to which the key project management traits are mastered by the NDPWs PMs is thus deemed to be inadequate with basic capabilities.

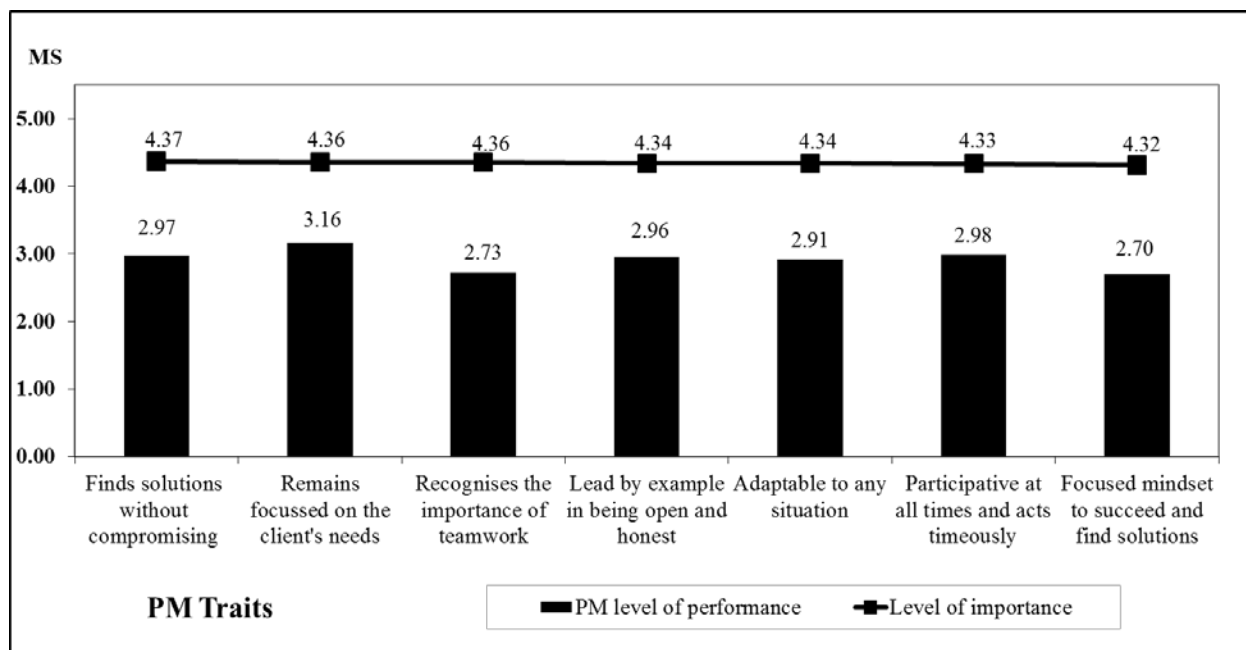
Table 4.2.22: The degree to which PMs have mastered traits ranked in order of the least performance relative to its importance (n = 117)

Project management traits	MS (Imp)	MS (Perform)	Rank
PMs have a mind-set where they focus on and succeed in finding solutions to problems.	4.32	2.70	1
PMs have recognised the importance of the collective team effort in getting results and have learnt to keep project team members motivated and even push team members the boundaries to get results.	4.36	2.73	2
Adaptability is a key characteristic of the departmental PMs.	4.34	2.91	3
PMs lead by example in terms of openness and honesty, and are also prepared to take risks and learn from their mistakes.	4.34	2.96	4
The challenge that PMs respond to is finding solutions that address the issues without compromising the overall project structure, i.e. striving for a win-win situation.	4.37	2.97	5
Departmental PMs are participative at all times and have found the right balance between consulting, deciding and acting timeously.	4.33	2.98	6
PMs remains focused on the client and listens effectively to their needs, take on board the feedback they are getting and look for ways of incorporating it whenever they can.	4.36	3.16	7
Mean MS	4.35	2.92	

The five least mastered project management traits are: PMs do not have a mind-set where they focus on and succeed in finding solutions to problems – its someone else’s problem (2.70); PMs do not recognise the importance of the collective team effort in getting results and have learnt to keep project team members motivated and even push team members the boundaries to get results (2.73); PMs are not easily adaptable which should be a key characteristic of the departmental PM (2.91); PMs do not lead by example in terms of openness and honesty, and are also not prepared to take risks and learn from their mistakes (2.96), and PMs are not able to successfully manage the challenge of finding solutions that address the issues without compromising the overall project structure, i.e. striving for a win-win situation (2.97).

Table 4.2.22 also illustrates the importance to master the key PM traits in terms of MSs based upon responses to a scale of 1 (unimportant) to 5 (very important). The rating of the importance to master PM traits resulted in a mean MS of 4.35, and all seven traits (100%) achieved MSs $\geq 4.32 \leq 4.37$, which implies that it is important for the NDPW PMs to master the key traits listed in Table 4.2.22.

Figure 4.2.4: The key PM traits ranked in order of importance relative to the current performance levels of the NDPW PMs (n=117)



The five most important traits which PMs should master are: accept challenges where the PMs must find solutions that address the issues without compromising the overall project structure, i.e. striving for a win-win situation (4.37); PMs must recognise the importance of the collective team effort in getting results and learn to keep project team members motivated and even push team members the boundaries to get results (4.36); PMs must remain focused on the client and listen effectively to their needs, take on board the feedback they are getting and look for ways of incorporating it whenever they can (4.36); adaptability is a key characteristic of the departmental PMs (4.34), and the PMs must lead by example in terms of openness and honesty, and should also prepared to take risks and learn from their mistakes (4.34).

Figure 4.2.4 illustrates the degree to which PMs have mastered key project management traits in order to be more successful in managing projects relative to its level of importance. The deviance between their level of performance and the level of importance is notable which implies that majority of the PMs of the NDPW have not developed the key traits of PMs required to be more successful as PMs.

Question 19: On typical NDPW projects, which are the most common causes of project failure in terms of organisational readiness for project implementation?

Table 4.2.23 illustrates the frequency of occurrence of the most common causes of project failure with regards to organisational readiness and support in terms of MSs based upon

responses to a scale of 1 (very seldom) to 5 (always). The rating of causes resulted in a mean MS of 3.16, and twelve of the fifteen (80%) causes achieved MSs $\geq 3.05 \leq 3.60$.

Table 4.2.23: The frequency of occurrence of key elements that lead to project failure in relation to its importance to become a project competent organisation (n = 97)

Elements that lead to project failure	MS (Imp)	MS (Freq)	Rank
Unsuitable contractors appointed thereby failing to perform due to lack of experience, inadequate capabilities in terms of project administration and management, or poor cash flow.	4.80	3.60	1
Appointment of consultants and contractors based on price and preference is viewed as being too subjective, hence the bid is generally awarded to the tenderer with the highest scoring points irrespective of identified financial and commercial risks.	4.78	3.56	2
Social objectives of the NDPW in terms of appointing BEE consultants and contractors supersedes all other objectives such as timeouts delivery of project within acceptable cost and quality parameters including health and safety on site.	4.73	3.44	3
Lack of skills and a proven approach to project management by the NDPW clients at both regional and head office levels.	4.39	3.32	4
Consultants failing to perform due to lack of not being suitably qualified, lack of experience, lack of exposure to the specific type of project or being in default by not rendering and efficient and effective service.	4.66	3.29	5
Evaluation of design proposals driven by initial costs rather than long-term value for money.	4.42	3.26	6
Lack of clear management ownership and leadership to ensure full organisational support at regional level.	4.33	3.16	7
Lack of skills and a proven approach to project management and risk management by management and support components at head office level.	4.47	3.14	8
Lack of understanding of, and contact with, the supply industry that include consultants, contractors, suppliers of materials, and goods at senior levels in the organisation.	4.02	3.11	9
Lack of clear senior management ownership and leadership at head office level and the perceived lack of both the ability and urgency to resolve operational issues effecting service delivery on the ground.	4.24	3.08	10
Lack of skills and a proven approach to project management and risk management by management and support components at regional level.	4.44	3.06	11
Lack of skills and a proven approach to project management and risk management by PMs.	4.49	3.05	12
Lack of effective and efficient engagement with stakeholders at head office level with clients.	4.29	2.97	13
Lack of effective and efficient engagement with stakeholders at head office level with clients.	4.56	2.82	14
Lack of clear top management and ministerial ownership and leadership in managing the respective portfolios.	4.20	2.51	15
Mean MS	4.46	3.16	

The ten most frequent common causes of project failure in terms of organisational readiness and support include: unsuitable contractors appointed thereby failing to perform due to lack of experience, inadequate capabilities in terms of project administration and management, or poor cash flow (3.60); appointment of consultants and contractors based on price and preference is viewed as being too subjective, hence the bid is generally awarded to the tenderer with the highest scoring points irrespective of identified financial and commercial risks (3.56); social objectives of the NDPW in terms of appointing BEE consultants and contractors supersedes all other objectives such as timeous delivery of project within acceptable cost and quality parameters including H&S on site (3.44); lack of skills and a proven approach to project management by the NDPW clients at both regional and head office levels (3.32); consultants failing to perform due to lack of not being suitably qualified, lack of experience, lack of exposure to the specific type of project or being in default by not rendering an efficient and effective service (3.29); evaluation of design proposals driven by initial costs (price) rather than long-term value for money (3.26); lack of clear management ownership and leadership to ensure full organisational support at regional level (3.16); lack of skills and a proven approach to project management and risk management by management and support components at head office level (3.14); lack of understanding of, and contact with, the supply industry (consultants, contractors, suppliers of materials and goods) at senior levels in the organisation (3.11), and the lack of clear senior management ownership and leadership at Head office level and the perceived lack of both the ability and urgency to resolve operational issues effecting service delivery on the ground (3.08).

Table 4.2.23 further illustrates the impact the presence of the common causes of project failure have on achieving project success in terms of MSs based upon responses to a scale of 1 (no impact) to 5 (severe impact). The rating of the importance resulted in a mean MS of 4.46, and all fifteen (100%) causes achieved $MSs \geq 4.20 \leq 4.80$, which implies that the causes have a high impact on achieving project success when present.

The ten causes with the highest perceived impact on project success are: unsuitable contractors appointed thereby failing to perform due to lack of experience, inadequate capabilities in terms of project administration and management, or poor cash flow (4.80); appointment of consultants and contractors based on price and preference is viewed as being too subjective, hence the bid is generally awarded to the tenderer with the highest scoring points irrespective of identified financial and commercial risks (4.78); social objectives of the NDPW in terms of appointing BEE consultants and contractors supersedes all other objectives such as timeous delivery of

projects within acceptable cost and quality parameters including H&S on site (4.73); consultants failing to perform due to lack of not being suitably qualified, lack of experience, lack of exposure to the specific type of project or being in default by not rendering an efficient and effective service (4.66); lack of effective and efficient engagement with stakeholders at head office level with clients (4.56); lack of skills and a proven approach to project management and risk management by PMs (4.49); lack of skills and a proven approach to project management and risk management by management and support components at head office level (4.47); lack of skills and a proven approach to project management and risk management by management and support components at regional level (4.44); evaluation of design proposals driven by initial costs (price) rather than long-term value for money (4.42), and the lack of skills and a proven approach to project management by the NDPW clients at both regional and head office levels (4.39).

Question 20: Indicate which one of the following levels best describes the present organisational situation of the NDPW in terms of organisational maturity.

This question sought to determine the current level of organisational maturity of the NDPW in terms of the following criteria:

- Level 1 Organisations at this level experience infrequent project performance predictability. Project management is performed inconsistently across the organisation and it is highly probable that the majority of the projects experience cost overruns, time delays, and defective deliverables. Isolated success stories are results of individual competent people, individual effort and unusual sacrifices. Very little training is provided if any;
- Level 2 occurs when there are indications that project management has been adopted as a methodology and that project management roles and responsibilities are defined. There are well developed templates, procedures and cost and schedules are being tracked. Proper and well-timed training is provided both technical and on generic project management topics as well as organisational procedures. The underlying disciplines and principles are not well understood or consistently followed. Therefore project success still is largely unpredictable and cost and schedule problems remain the norm;
- Level 3 Project management methodologies are integrated with other organisational structures and procedures. A PMO / PSO facilitates functional units' understanding of basic project management practices, well-defined performance management policies and assessments and defines a clear path for continuous improvement. Proper up to date project management tools and techniques are adopted and used throughout the organisation.

Problems are methodically anticipated and efficiently prevented to mitigate its impact. Information is collected, shared and used across projects. The organisation demonstrates its commitment to project management by establishing a fully-fledged competent PMO / PSO with specific responsibilities for deployment of a standard project management methodology;

- Level 4 is described as compressive where there is organisational-wide commitment to project management culture. The emphasis is to ensure that project management supports the business goals of the organisation. Quantitative project objectives are set to measure progress in implementing project management procedures and to determine the effectiveness of these procedures. Project success is the norm where performance in areas of cost, time, and quality conform to the baseline project execution plan, and
- At Level 5 is described as optimising with a focus on continuous improvement. Project management roles and responsibilities are well understood and implemented by all. Common causes of project management problems are prioritised and systematically eliminated. There is participation in benchmarking to continually generate ideas for improvement and as a way to refine project performance metrics. Project success is the norm and meet, or even surpasses, objectives in the areas of cost, scope, time, quality, organisational social objectives and client expectations.

Table 4.2.24 illustrates that the current maturity level the NDPW as a project organisation is at best a level 2, although elements of levels 3 and 4 may be present, but not fully adopted as yet. Nearly a third of the respondents (30.9%) deemed the organisational maturity level of the NDPW to be on Level 1, 41.2% - Level 2, 23.7% - Level 3 and 4.1% - Level 4.

Table 4.2.24: Level of organisational maturity as rated by the respective respondent groups (n=97)

Groups	Level					n
	1	2	3	4	5	
Clients	3	6	1	0	0	10
Consultants	14	10	10	3	0	37
Key NDPW staff	9	4	0	0	0	13
PMs	4	20	12	1	0	37
All Groups	30	40	23	4	0	97
Percentage	30.93	41.24	23.71	4.12	0	100

It emanated from interviews that, as an implementing agent for 40 plus years the NDPW has deteriorated over the last 17 years (1995 to 2012) into an organisation where proficient service delivery is no longer possible due to the ‘brain drain’ of competent people accepting early

retirement packages, incorrect implementation of affirmative action and restructuring processes, and the appointment of unsuitably qualified and / or inexperienced personnel in key positions throughout the organisation, especially in managerial positions.

Question 21: What is the purpose of measuring performance of an organisation?

Table 4.2.25 illustrates the frequency of measuring the performance of organisations with regards to key performance areas in terms of MSs based upon responses to a scale of 1 (never) to 5 (always). The rating of the frequency of measuring organisation performance resulted in a mean MS of 2.62, and all eight (100%) of the purposes of measuring performance achieved MSs $\geq 2.32 \leq 2.94$.

Table 4.2.25: The purpose of measuring performance of an organisation ranked in order of the current level of evaluating projects relative to the necessity to evaluate projects (n = 97)

Purpose of measuring organisational performance	MS (Imp)	MS (Perform)	Rank
Learn – Why is what working or not working?	4.60	2.32	1
Promote – How can political leaders, stakeholders and citizens be convinced that the organisation is doing a good job?	4.04	2.38	2
Celebrate – What accomplishments are worthy of the important organisational ritual of celebrating success?	4.40	2.49	3
Improve – What exactly should who do differently to improve performance of the organisation?	4.60	2.56	4
Motivate – How can line staff be motivated, middle managers and stakeholders to do whatever is necessary to improve performance?	4.16	2.66	5
Control – How to ensure that the right ‘things’ are being done?	4.47	2.76	6
Evaluate – How well is the organisation performing?	4.48	2.87	7
Budget – On what programmes, people or projects should the organisation spend money?	4.44	2.94	8
Mean MS	4.40	2.62	

The five reasons for measuring organisational performance the least frequent within the NDPW are to: learn – why is what working or not working (2.32); promote – how can political leaders, stakeholders and citizens be convinced that the organisation is doing a good job (2.38); celebrate accomplishments that are worthy of celebrating success (2.49); improve – what exactly should who do differently to improve performance of the organisation (2.56), and motivate staff– how can line staff, middle managers and stakeholders be motivated to do whatever is necessary to improve performance (2.66).

Table 4.2.25 also illustrates the necessity (importance) to measure organisational performance in terms of MSs based upon responses to a scale of 1 (strongly disagree) to 5 (strongly agree). The rating of importance to measure organisational performance resulted in a mean MS of 4.40, and all eight of the reasons (100%) achieved MSs $\geq 4.04 \leq 4.60$.

The five most important reasons for organisational performance measurement is to: learn – why is what working or not working (4.60); improve – what exactly should who do differently to improve performance of the organisation (4.60); evaluate – how well is the organisation performing (4.48); control – how to ensure that the right ‘things’ are being done (4.47), and budgets – on what programmes, people or projects should the organisation spend money (4.44).

Interviews revealed that constructive organisational performance is generally only measured when necessary within the NDPW (mean MS 2.62). Respondents agreed that it is necessary to measure organisational performance in order to become a project competent organisation (mean MS 4.40). The two organisational performance assessments undertaken the most frequently within the NDPW are: the budget, i.e. on what programmes, people or projects should the organisation spend money (2.94), and evaluate, i.e. how well is the organisation performing (2.87) in terms of expenditure. Both measures are deemed to be similar in nature as the performance of both the NDPW and within the NDPW is mainly assessed in terms of actual expenditure versus the allocations. When the allocation is spent, the PM or the regional office or the organisation as a whole are considered to be performing well. Under expenditure is equated to underperformance irrespective of the reasons or contributing factors which is beyond the PMs’ control. The PMs’ performance within the NDPW are generally only assessed and evaluated in terms of progress and expenditure on a monthly basis. All other contributing factors to project success are not assessed or taken into account and lessons are seldom shared nor heeded. This also reflects the NDPW’s inability to affect interventions timeously in order to curb under expenditure.

Question 22: What is the main purpose of evaluating projects?

Table 4.2.26 illustrates the level of evaluating projects in terms of MSs based on responses to a scale of 1 (never) to 5 (always). The rating of the level of evaluation resulted in a mean MS of 2.54, and of all eight (100%) of the identified purposes for evaluating projects are seldom evaluated effectively, which achieved MSs $\geq 2.27 \leq 2.78$.

Table 4.2.26: The current level (performance) of evaluating projects in the NDPW ranked relative to the necessity to evaluate projects (n = 117)

The purpose of evaluating projects	MS (Necessity)	MS (Perform)	Rank
Operationalize total transparency.	4.38	2.27	1
Strengthening partnerships between the NDPW, client, consultants and contractors.	4.34	2.43	2
Influencing organisational culture for continuous improvement.	4.61	2.49	3
Promote understanding with regards to the operational environment and associated risks.	4.24	2.50	4
Facilitating organisational and individual learning and change.	4.62	2.56	5
Provide a platform for sharing knowledge amongst peers and all divisions in the organisation.	4.54	2.61	6
Reinforcing accountability of the organisation to its stakeholders.	4.57	2.64	7
Provide accurate information for future decision-making and project implementation methodologies, internal processes and policies.	4.68	2.78	8
Mean MS	4.50	2.54	

Evaluations done the most seldom are to: operationalize total transparency (2.27); strengthen partnerships between the NDPW, clients, consultants and contractors (2.43); influence organisational culture for continuous improvement (2.49); promote understanding with regards to the operational environment and associated risks (2.50), and to facilitate organisational and individual learning and change (2.56).

Table 4.2.26 illustrates the necessity (importance) of measuring organisational performance in terms of MSs based upon responses to a scale of 1 (strongly disagree - unimportant) to 5 (strongly agree – very important). The ratings of the necessity to evaluate resulted in a mean MS of 4.50, and all eight purposes (100%) for evaluating projects achieved MSs $\geq 4.24 \leq 4.68$, which implies that it is necessary and important to measure organisational performance of the NDPW.

The five most important purposes to evaluate projects is to: provide accurate information for future decision-making and project implementation methodologies, internal processes and policies (4.68); influence organisational culture for continuous improvement (4.61); reinforcing accountability of the organisation to its stakeholders (4.57); provide a platform for sharing knowledge amongst peers and all divisions in the organisation (4.54), and to operationalize total transparency (4.38), which is not currently happening within the NDPW.

It became eminent from interviews that failing to evaluate projects thoroughly and heeding to lessons learnt over the years has led to the demise and inability of the NDPW, and many other government implementing agencies, to implement projects proficiently thereby impacting negatively on client satisfaction.

Question 23: Indicate which one of the following levels best describes the present organisational situation within the NDPW in terms of their Project Management Office (PMO) or Project Support Office (PSO).

This question aimed to determine the current maturity level of the NDPW's PMO relative to the following criteria:

- Level 1 is the reactive project management stage where methods are undocumented and delivery, budgets and schedules are uncontrolled. At this basic level, PMOs need to establish methods for project scheduling, time tracking, resource assignments, project tracking, oversight and support, and perhaps use an automated project dashboard to track project success;
- Level 2 occurs when organisations begin adopting repeatable processes. The main project management processes have been defined, but not constantly used or always followed. Still, project teams find it difficult to repeat earlier successes, and the project still risks exceeding budgets and schedules. At this level, PMOs should automate project budgeting, risk and issue tracking, requirements tracking, resource management;
- Level 3 PMOs show a commitment to proactive, standardised project management. They employ documented standard project management and delivery processes, and consistently use these processes companywide for project delivery. When these new tasks are mastered, the PMO can focus on automating other functions such as financial management and business process modelling;
- Level 4 PMOs demonstrate measured project management. Quantitative key performance indicators have been specified for project success and are monitored frequently. The PMO has achieved predictable and controllable project delivery, and is now free to become more innovative, and
- At Level 5, the most mature PMO organisations continuously improve project management. At this level, the 'connected' PMO can focus on automating project implementation and management, collaboration through social networks and blogs – and communication through text, IM, video or mobile.

Table 4.2.27 illustrates that the current PMO maturity level of the NDPW is at best a level 2 although elements of level 3 such as the standardised documentation is available there are still a number of shortcomings e.g. out-dated forms, supporting documents not updated and available timeously, and changes are made to processes without being tested thereby creating more delays and problems.

Table 4.2.27: Maturity level of the NDPW's PMO (n=97)

Groups	Maturity Level					n
	1	2	3	4	5	
Clients	0	9	1	0	0	10
Consultants	0	15	21	1	0	37
Key NDPW staff	9	3	1	0	0	13
PMs	0	23	13	1	0	37
All groups	9	50	36	2	0	97
Percentage	9.3	51.6	37.1	2.1	0	100

The minority of the respondents (9.3%) deemed the NDPW's PMO maturity level to be on Level 1, Level 2 (51.6%), Level 3 (37.1%), and Level 4 (2.2%). Interviews also elevated the fact that most of the key NDPW staff whom interact with the PMO of a daily basis indicated that the PMO is only on maturity Level 1 which could be regarded as a more true reflection of the PMO's current performance as the consultants and the PMs are not working directly with them although their activities do have a direct impact on project implementation within the NDPW.

Question 24: Listed below are a number of key activities to be performed by a PMO / PSO. Will the establishment of a formal PSO in each regional office aid the NDPW in becoming a project competent organisation and improve service delivery?

Table 4.2.28 illustrates the current level of performance of the NDPW PMO in terms of MSs based upon responses to a scale of 1 (never - non-existent) to 5 (always – in place, very effective and efficient). The rating of the current level of performance resulted in a mean MS 2.55, and all eight (100%) identified functions of the PMO achieved MSs < 3.00 varying between ≥ 2.40 and ≤ 2.69 which implies that it is seldom performed and when performed it is deemed to be ineffective.

The five least seldom and ineffective performed key activities currently performed by the PMO are to: deliver project management coaching services to keep projects from getting into trouble (2.40); track organisation-wide metrics on the state of project management, project delivery, and

the value being provided to the business (2.41); provide training (internal or outsourced) to build core project management competencies and a common set of experiences (2.52); act as the overall advocate for project management to the organisation that includes actively educating and selling managers and team members on the value gained through the use of consistent project management processes (2.57), and build the PM methodology and update it to account for improvements and best practices and disseminate throughout the organisation (2.57).

Table 4.2.28: The current performance of the NDPW Head office PMO ranked relative to the necessity of establishing PSOs in regional offices (n = 97)

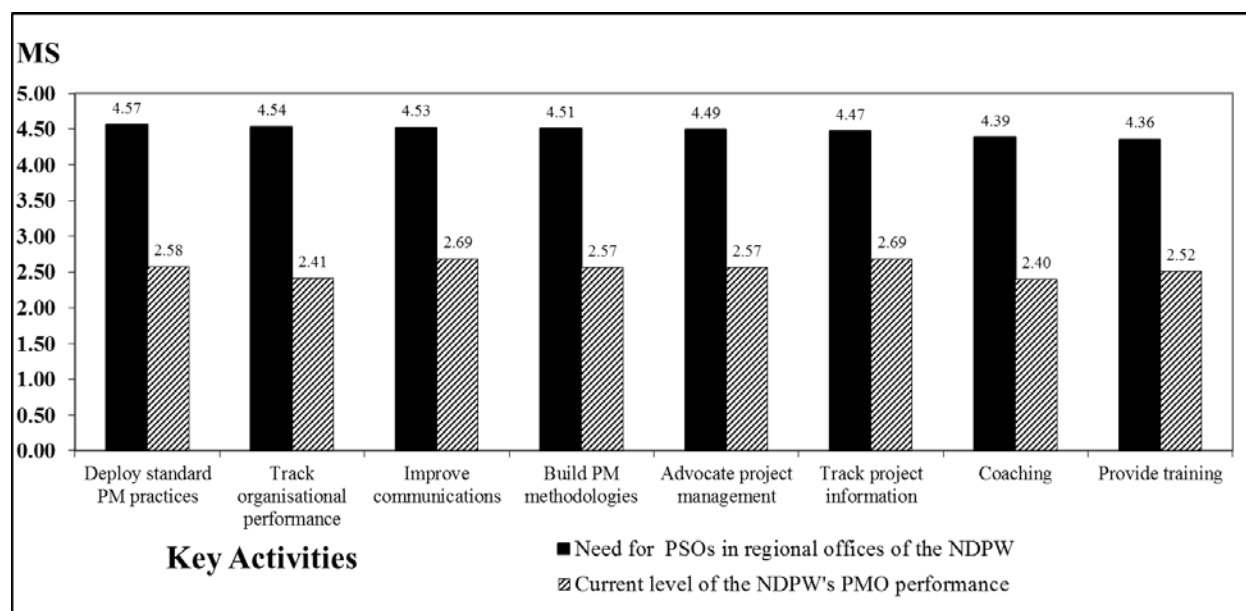
Purpose / activities of a PMO / PSO	MS (Imp)	MS (Perform)	Rank
Deliver project management coaching services to keep projects from getting into trouble. Projects at risk can also be coached to ensure they do not worsen.	4.39	2.40	1
Track organisation-wide metrics on the state of project management, project delivery, and the value being provided to the business. The PMO also assesses the general project delivery environment on an on-going basis to determine the improvements that have been made.	4.54	2.41	2
Provide training (internal or outsourced) to build core project management competencies and a common set of experiences. If the training is delivered by the PMO, there is a further reduction in overall training cost paid to outside vendors.	4.36	2.52	3
Act as the overall advocate for project management to the organisation. This includes actively educating and selling managers and team members on the value gained through the use of consistent project management processes.	4.49	2.57	4
Build the methodology and updates it to account for improvements and best practices. For example, as new or revised processes and templates are made available, the PMO deploys them consistently to the organisation.	4.51	2.57	5
Establish and deploy a common set of project management processes and templates, which saves each PM, or each organisation, from having to create these on its own. These reusable project management components help projects start up more quickly and with less effort.	4.57	2.58	6
Track basic information on the current status of all projects in the organisation and provides project visibility to management in a common and consistent manner.	4.47	2.69	7
Facilitate improved project team communications by having common processes, deliverables, and terminology. Less misunderstanding and confusion occurs within the organisation if everyone uses the same language and terminology for project-related work.	4.53	2.69	8
Mean MS	4.48	2.55	

Table 4.2.28 similarly illustrates the necessity (importance) to establish PSOs in the regional offices in terms of MSs based on responses to a scale of 1 (strongly disagree / unimportant) to 5 (strongly agree / very important). The rating of the necessity to establish PSOs in regional

offices of the NDPW resulted in a mean MS of 4.48, and all eight (100%) of the purposes for establishing PSOs in the regional offices achieved MSs $\geq 4.39 \leq 4.57$.

The five most important reasons to establish the PSOs are to: establish, deploy and maintain a common set of project management processes and templates, which saves each PM from having to create these on its own that will help projects start up more quickly and with less effort (4.57); facilitate improved project team communications by having common processes, deliverables, and terminology as less misunderstanding and confusion occurs within the organisation if everyone uses the same language and terminology for project-related work (4.53); track organisation-wide metrics on the state of project management, project delivery, and the value being provided to the business and assess the general project delivery environment on an on-going basis to determine the improvements that have to been made (4.54); build the project implementation methodology and update it to account for improvements and best practices (4.51), and act as the overall advocate for project management to the organisation that include actively educating and selling managers and team members on the value gained through the use of consistent project management processes (4.49).

Figure 4.2.5: The necessity of a PSO in regional offices ranked relative to the current performance of the NDPW Head office PMO (n = 97)



It is notable from Table 4.2.28 that there is a definite need for PSOs within the regional offices (mean MS = 4.48) as the current level of performance of the PMO that is situated in the head office of the NDPW is considered to be ineffective and more reactive in nature (mean MS = 2.55).

The current level of performance of the PMO and the importance to establish PSOs in the regional offices is notable in Figure 4.2.5. Most of the respondents (95.3%) agreed that there should be a PSO in each regional office to assist the NDPW in becoming a project competent organisation and improve service delivery both internally and externally (41.5% agreed and 53.7% strongly agreed).

Question 26: To what extent has the NDPW adopted best practices in their approach to establish project management as the corporate methodology where everyone within the supply chain understands their contribution toward achieving project success?

Table 4.2.29 illustrates the extent to which the NDPW has adopted project management best practices as the corporate methodology in terms of MSs based upon responses to a scale of 1 (completely inadequate – nothing in place) to 5 (mastered processes – maximum efficiency). The rating of the adoption of PM best practices resulted in a mean MS of 2.21. The level of performance of four of the fifteen (26.7%) identified functions of the PMO are deemed to be completely inadequate, which achieved MSs $\geq 1.14 \leq 1.82$. Ten of the fifteen (66.7%) identified functions of the PMO are deemed to be inadequate where there is a system in place, but totally inefficient which achieved MSs $\geq 2.00 \leq 2.76$. One of the fifteen (6.7%) functions achieved a MS = 3.76. The current PMO is thus deemed to be inadequate which achieved a mean MS of 2.21.

The ten least effective key activities currently performed by the PMO are to: formalise mentoring and coaching plans (1.14); develop strategic training and education programmes (1.58); effective assessment of skills and development of PM competencies (1.62); develop, refine and roll out of PMO / PSO functions (1.82); develop effective performance assessments of all role players in the project implementation process in relation to their respective roles (2.00); effective knowledge management and adding value to the supply chain (2.22); effective management of resources both financial and human to support the core function of the NDPW which is project implementation (2.24); development of an efficient process for resource planning / allocation (2.24); standardised business processes to facilitate efficient project implementation (2.28), and efficient tracking and ease of reporting on projects' status and collating information (2.28).

Table 4.2.29: The current level of organisational performance in project implementation ranked relative to the importance to adopt project management best practices as the corporate methodology (n = 50)

Project management best practices	MS (Imp)	MS (Perform)	Rank
Formalised mentoring and coaching plans.	4.68	1.14	1
Development of strategic training and education programmes.	4.68	1.58	2
Effective assessment of skills and development of competencies.	4.76	1.62	3
Development and roll out of a PMO or PSO function.	4.76	1.82	4
Effective performance assessments of all role players in the project implementation process in relation to their respective roles.	4.60	2.00	5
Effective knowledge management adding value to the supply chain.	4.56	2.22	6
Effective management of resources both financial and human.	4.68	2.24	7
Development of an efficient process for resource planning / allocation.	4.68	2.24	8
Standardised business processes to facilitate project implementation.	4.74	2.28	9
Efficient tracking and ease of reporting on projects' status and collating information.	4.58	2.28	10
Alignment of projects to the strategic goals of the organisation.	4.58	2.36	11
Reduction in the time and money spent on ensuring projects are brought to a successful conclusion.	4.54	2.38	12
Standardised and easy to use tools, up to date software and templates.	4.74	2.48	13
Development of career paths.	4.56	2.76	14
Requirement and support for industry certification.	4.58	3.76	15
Mean MS	4.65	2.21	

Table 4.2.29 also illustrates the necessity (importance) to adopt project management best practices as the corporate methodology in terms of MSs based upon responses to a scale of 1 (unimportant) to 5 (very important). The rating of the training and of adopting project management practices resulted in a mean MS of 4.65, and all fifteen (100%) reasons for adopting project management best practices achieved $MSs \geq 4.54 \leq 4.76$, which implies that it is important for the NDPW to adopt project management best practices as the corporate methodology in order to become a project competent organisation.

The ten most important fundamentals that would advance the ethos of effective and efficient project management within the organisation by adopting project management best practices as the corporate methodology include: effective assessment of skills and development of PM competencies (4.76); development and roll out of the PMO / PSO functions (4.76); standardise business processes to facilitate efficient project implementation (4.74); generate standardised and easy to use tools, up to date software and templates (4.74); formalise mentoring and

coaching plans (4.68); development of strategic training and education programmes (4.68); effective management of resources both financial and human (4.68), development of an efficient process for resource planning and allocation (4.68); develop effective performance assessments of all role players in the project implementation process in relation to their respective roles (4.60), and efficient tracking and ease of reporting on projects' status and collating information (4.58).

Table 4.2.29 illustrates that the current level of organisational performance on average is deemed to be inadequate where systems are in place but totally inefficient (mean MS 2.21). The respondents also considered it to be important to have organisational support whereby the fundamentals listed in Table 4.2.29 are present (mean MS 4.65). This will facilitate the NDPW to make project success the norm and build a project competent organisation.

Question 27: In addressing the issues relating to the problems of cultural differences has the NDPW developed procedures to resolve issues timely and swiftly?

Table 4.2.30 illustrates the extent to which the NDPW has the ability to address issues relating to cultural differences in terms of MSs based upon responses to a scale of 1 (completely inadequate – nothing in place) to 5 (mastered processes – maximum efficiency). The rating of the current level of performance / abilities resulted in a mean MS of 2.02. The level of performance of two of the five (40%) key elements for dealing with cultural issues are deemed to be completely inadequate (not able at all) which achieved MSs $\geq 1.82 \leq 1.88$. The remaining, three of the five (60%) elements are deemed to be inadequate with basic capabilities where there is a system in place but totally inefficient which achieved MSs $\geq 2.20 \leq 2.14$. The current ability of the NDPW to deal with cultural issues is thus deemed to be inadequate which achieved a mean MS of 2.02.

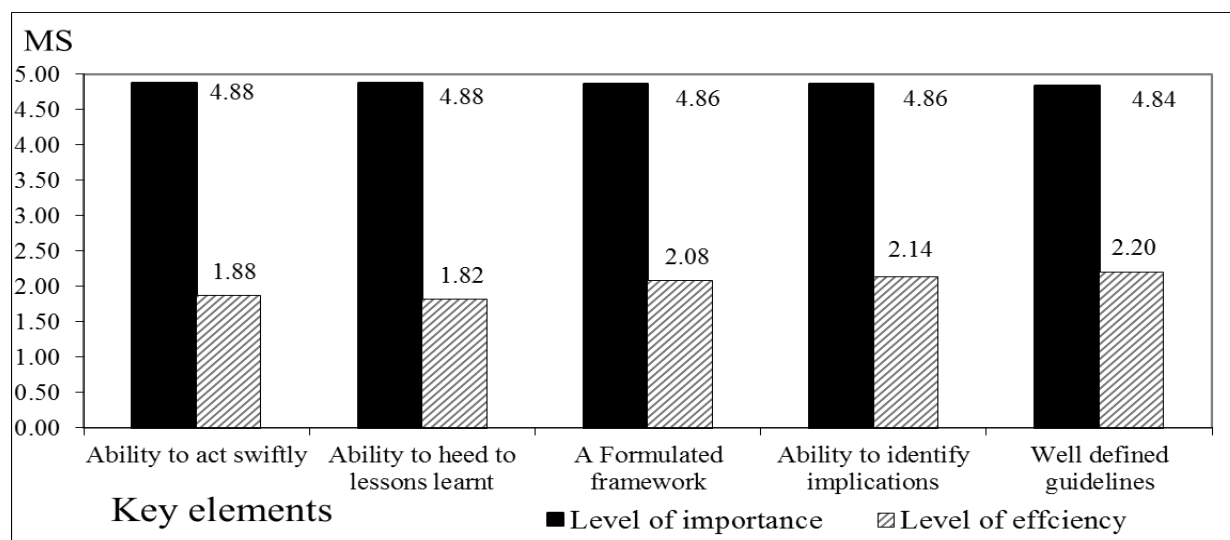
The elements least effective in addressing cultural issues are: the organisation's inability to heed to lessons learnt (1.82); management's inability to act swiftly, unbiased and resolve incidents immediately without prejudiced as they arise (1.88); the lack of a formulated framework for developing a high performing organisation which takes account of cultural differences and how to leverage the diversity present (2.08); the inability to identify the nature and implications of cultural differences within the organisation itself as well as within the project teams and working with contractors (2.14), and the lack of well-defined guidelines in how to deal with biases and cultural differences, and understanding the impact it could have on the organisation's efficiency levels (2.20).

Table 4.2.30: The current level of performance to address cultural differences within the NDPW as an organisation ranked relative to its level of importance (n=50)

Key elements of addressing cultural differences	MS (Imp)	MS (Perform)	Rank
Organisation's ability to heed to lessons learnt.	4.88	1.82	1
Management's ability to act swiftly, unbiased and resolve incidents immediately without prejudiced as they arise.	4.88	1.88	2
A formulated framework for developing a high performing organisation which takes account of cultural differences and how to leverage the diversity present.	4.86	2.08	3
Ability to identify the nature and implications of cultural differences within the organisation itself as well as within the project teams and working with contractors.	4.86	2.14	4
Well defined guidelines in how to deal with basis cultural differences and understanding the impact it could have on the organisation's efficiency levels.	4.84	2.20	5
Mean MS	4.86	2.02	

Table 4.2.30 and Figure 4.2.6 illustrate the necessity (importance) to be able to address issues relating to cultural differences in terms of MSs based upon responses to a scale of 1 (unimportant) to 5 (very important). All five (100%) of the elements of being able to address issues swiftly, effectively and efficiently achieved MSs $\geq 4.84 \leq 4.88$. This implies that it is important for the NDPW to be able to address cultural issues swiftly, effectively and efficiently in order to become a project competent organisation.

Figure 4.2.6: The current level of importance relative to the efficiency to address cultural differences within the NDPW as an organisation (n=50)



It is notable from Figure 4.2.6 that the NDPW is found lacking in all the elements of not being able to deal with cultural differences and racial conflict in the workplace when comparing the level of importance to the actual efficiency and performance.

Question 28: To what extent are the following aspects of project implementation within the NDPW being assessed?

Table 4.2.31 illustrates the efficiency of the NDPW in terms of assessing key elements (activities) throughout the project implementation lifecycle relative to their importance in terms of MSs based upon responses to a scale of 1 (non-existent – nothing in place) to 5 (more than adequate – system very effective). The ratings of the current level of efficiency resulted in a mean MS of 2.13. The level of efficiency relative to four of the twenty elements (20%) is deemed to be non-existent and completely inadequate due to the MSs being ≥ 1.72 and ≤ 1.88 . The efficiency relative to the remaining sixteen elements (80%) is deemed to be inadequate due to the MSs being ≥ 2.00 and ≤ 2.38 . The current ability of the NDPW to assess key activities throughout the project implementation life cycle is thus deemed to be inadequate (mean MS 2.13).

The ten least assessed elements of organisational effectiveness throughout the project implementation lifecycle within the NDPW include: the scrutiny of project phase schedule factors (1.72); development of H&S plan and implementing penalties for non-compliance (1.72); scrutiny of project phase cost factors (1.74); preliminary engineering and design factors (1.84); identification and use of lessons learned from peers and on previous projects (1.88); matching PM capabilities with complexity levels of projects (2.00); project cost escalation - baseline cost versus final cost (2.04); development of and compliance to a quality management plan for each project (2.04); project time / schedule escalation - baseline duration versus final duration (2.06), and senior management involvement in addressing project management issues to ensure commitment throughout the organisation (2.14).

Table 4.2.31 further illustrates the importance and necessity to assess key elements of organisational effectiveness throughout the project implementation lifecycle in terms of MSs based upon responses to a scale of 1 (unimportant) to 5 (very important). The rating of the importance and necessity to assess the key elements of organisational effectiveness resulted in a mean MS of 4.62.

Table 4.2.31: The current level of assessment of the elements of organisational effectiveness ranked relative to its importance (n=50)

Elements of organisational effectiveness throughout the project lifecycle	MS (Imp)	MS (Perform)	Rank
Scrutiny of project phase schedule factors.	4.64	1.72	1
Development of H&S plan and implementing penalties for non-compliance.	4.64	1.72	2
Scrutiny of project phase cost factors.	4.62	1.74	3
Preliminary engineering and design factors.	4.64	1.84	4
Identification and use of lessons learned from peers and on previous projects.	4.60	1.88	5
Matching PM capabilities with complexity levels of projects.	4.64	2.00	6
Project cost escalation - baseline cost versus final cost.	4.62	2.04	7
Development of and compliance to a quality management plan for each project.	4.64	2.04	8
Project time or schedule escalation - baseline duration versus final duration.	4.64	2.06	9
Senior management involvement in addressing project management issues.	4.62	2.14	10
Implementation of project risk management plan.	4.60	2.18	11
Reliability of cost estimates provided by PMs.	4.58	2.24	12
Reliability of schedule estimates provided by PMs.	4.64	2.26	13
Accuracy and stability of scope - % scope variance.	4.60	2.28	14
Corrective actions taken in terms of timeliness, procedures, accuracy and correctness.	4.64	2.28	15
Development and adherence to the original project execution plan.	4.50	2.30	16
Achievement of social objectives in terms of training and education.	4.60	2.36	17
Overall effectiveness of project communication in terms of accuracy, timeliness, completeness, understanding and procedures.	4.64	2.36	18
Achievement of social objectives in terms of contract participation goals.	4.60	2.38	19
Organisation's commitment to project management training.	4.64	2.74	20
Mean MS	4.62	2.13	

All twenty (100%) of the elements that must be assessed throughout the project lifecycle achieved MSs $\geq 4.50 \leq 4.64$, which implies that it is important for the NDPW to be able to assess all the key activities throughout the project implementation lifecycle and act on the findings in order to become a project competent organisation.

The ten most important elements to be assessed throughout the project lifecycle all achieved MSs = 4.64: the scrutiny of project phase schedule factors; development of H&S plan and

implementing penalties for non-compliance; preliminary engineering and design factors; matching PM capabilities with complexity levels of projects; development of and compliance to a quality management plan for each project; project time / schedule escalation (baseline duration versus final duration); reliability of schedule (time) estimates provided by PMs; corrective actions taken in terms of timeliness, procedures, accuracy and correctness; overall effectiveness of project communication in terms of accuracy, timeliness, completeness, understanding and procedures, and the organisation's commitment to project management training.

It is essential to assess the elements of organisational effectiveness listed in Table 4.2.31 to see whether the PMs are actually managing their projects and driving the project implementation process (mean MS 4.62).

The current level of effectiveness within the NDPW is considered to be inadequate (mean MS 2.13). This is attributed to the fact that projects are not truly assessed on the fundamentals listed in Table 4.2.31, but predominately only on progress and expenditure. Interviews revealed that PMs only need to report on the elements listed in Table 4.2.31 when the need arises and that is normally when the project has already gone wrong and often too late for interventions. No records or data base is generated from the information sourced.

Table 4.2.31 affirms the present situation where the NDPW has failed to develop and implement a proper project assessment methodology that will produce documented proof on shortcomings in the project implementation system which can then be addressed and monitored thereby facilitating continuous improvement and empowering all involved in the project cycle. This is evident from the vast difference between the level of importance and the NDPW's ineffectiveness in project implementation failing to perform key activities to facilitate achieving project success and organisational growth (mean MS 4.62 versus 2.13).

Table 4.2.32 illustrates that 19% of the respondents are of the opinion that the NDPW has nothing in place to assess its project implementation constructively. The majority of the respondents (50.7%) indicated that there is a basic system in place, but is inadequate and 28.8% argued that the current system is adequate but there is definitely room for improvement while 1.5% indicated that the current assessment of projects is effective and sufficiently adequate.

Table 4.2.32: Assessing the effectiveness of implementing key activities achieve project success in relation to its importance to achieve project success (n = 50)

Current level of assessment (%)		Level of importance (%)	
Non existent	19.0	Unimportant	0.0
Inadequate	50.7	Of little importance	0.0
Adequate	28.8	Moderately important	6.0
Sufficiently adequate	1.5	Important	26.3
More than adequate	0.0	Very important	67.7

It is notable from Table 4.2.32 that 67.7% of the respondents are of the opinion that it is very important, and 26.3% important and 6.0% moderately important that the NDPW should assess projects more comprehensively on the fundamentals listed in Table 4.2.29.

Assessing projects in this manner will provide substantiated evidence that will inform decision makers on steps to be taken and to develop new initiatives and interventions that would facilitate growth into a project competent organisation.

4.3 RELATING DEPENDENT VARIABLES TO INDEPENDENT VARIABLES

4.3.1 DESCRIPTIVE STATISTICAL BREAKDOWN OF QUANTITATIVE QUESTIONS

According to Laerd Statistics (2012: 1), an assessment of the normality of data is a prerequisite for statistical tests because normal data is an underlying assumption in parametric testing that is done either by relying on statistical tests or visual inspection.

Statistical tests have the advantage of making an objective judgement of normality, but are disadvantaged by sometimes not being sensitive enough in the case of small samples or overly sensitive to large samples.

As in this instance the statistician, Dr. Jacques Pietersen from the NMMU statistical department, preferred to use his experience to make a subjective judgement about the data from plots and graphs. The data was deemed to be normal and thus did not require tests for normality.

A breakdown of the descriptive statistic responses to the quantitative questions posed to the incumbents during the research is reflected in Table 4.3.1.

Table 4.3.1: Descriptive breakdowns of quantitative questions – Part 1

Respondent groups	Q1a			Q1b			Q2			Q3		
	Mean	n	SD	Mean	n	SD	Mean	n	SD	Mean	n	SD
Clients	3.11	10	0.35	2.95	10	0.32	2.79	10	0.25	3.00	10	0.24
Consultants	2.86	37	0.53	3.48	37	0.42	2.87	37	0.40	3.04	37	0.34
Key NDPW staff	-	-	-	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-	-	-	-
PMs	2.30	37	0.58	3.58	37	0.42	3.19	37	0.52	2.99	37	0.39
All Groups	2.64	84	0.62	3.46	84	0.45	3.00	84	0.47	3.01	84	0.35
Respondent groups	Q4			Q7			Q8			Q9		
	Mean	n	SD	Mean	n	SD	Mean	n	SD	Mean	n	SD
Clients	2.93	10	0.39	2.85	10	0.60	3.51	10	0.49	2.67	10	0.44
Consultants	2.69	37	0.45	2.50	37	0.68	3.31	37	0.45	2.61	37	0.62
Key NDPW staff	2.94	13	0.39	3.48	13	0.61	3.37	13	0.25	2.27	13	0.42
Contractors	-	-	-	2.91	20	0.33	3.08	20	0.25	2.24	20	0.54
PMs	2.94	37	0.41	2.76	37	0.79	3.54	37	0.42	2.25	37	0.58
All Groups	2.84	97	0.43	2.79	117	0.71	3.37	117	0.42	2.40	117	0.58
Respondent groups	Q12			Q13			Q13			Q14		
	Mean	n	SD	Mean	n	SD	Mean	n	SD	Mean	n	SD
Clients	3.50	10	0.38	3.24	10	0.63	2.60	10	0.48	2.89	10	0.65
Consultants	2.71	37	0.65	3.44	37	0.42	3.27	37	0.58	3.56	37	0.67
Key NDPW staff	3.19	13	0.41	3.11	13	0.72	2.52	13	0.46	2.30	13	0.34
Contractors	3.44	20	0.48	-	-	-	-	-	-	2.82	20	0.73
PMs	2.76	37	0.51	3.46	37	0.60	3.01	37	0.52	3.47	37	0.67
All Groups	2.97	117	0.61	3.38	97	0.56	3.00	97	0.59	3.21	117	0.77
Respondent groups	Q15			Q16			Q17			Q19		
	Mean	n	SD	Mean	n	SD	Mean	n	SD	Mean	n	SD
Clients	2.84	10	0.37	2.60	10	0.57	3.14	10	0.62	3.65	10	0.55
Consultants	3.50	37	0.45	3.25	37	0.63	2.95	37	0.84	3.01	37	0.51
Key NDPW staff	2.09	13	0.49	2.08	13	0.32	2.13	13	0.62	2.94	13	0.34
Contractors	2.96	20	0.53	3.28	20	0.48	3.04	20	0.33	-	-	-
PMs	2.94	37	0.62	2.94	37	0.76	3.03	37	0.70	3.25	37	0.60
All Groups	3.02	117	0.66	2.97	117	0.72	2.92	117	0.73	3.16	97	0.57
Respondent groups	Q21			Q22			Q24			Q26		
	Mean	n	SD	Mean	n	SD	Mean	n	SD	Mean	n	SD
Clients	4.59	10	0.42	4.59	10	0.42	4.59	10	0.42	-	-	-
Consultants	4.30	37	0.61	4.31	37	0.63	4.25	37	0.54	-	-	-
Key NDPW staff	4.27	13	0.45	4.56	13	0.44	4.68	13	0.42	2.17	13	0.40
Contractors	-	-	-	4.43	20	0.22	-	-	-	-	-	-
PMs	4.50	37	0.50	4.68	37	0.47	4.62	37	0.50	2.08	37	0.49
All Groups	4.40	97	0.54	4.50	117	0.51	4.48	97	0.52	2.10	50	0.47

Table 4.3.1 – Part 2

Respondent groups	Q27			Q28		
	Mean	n	SD	Mean	n	SD
Clients	-	-	-	-	-	-
Consultants	-	-	-	-	-	-
Key NDPW staff	1.88	13	0.30	1.90	13	0.57
Contractors	-	-	-	-	-	-
PMs	2.08	37	0.50	2.21	37	0.44
All Groups	2.02	50	0.46	2.13	50	0.49

4.3.2 ITEM AND RELIABILITY ANALYSIS

This section of the descriptive data analysis assesses the data received across the research categories determining the internal consistencies determined by calculating the value of coefficient alpha (Cronbach's alpha) as a measure of the reliability of the responses received. Cronbach's alpha reliability coefficient normally ranges between 0 and 1 (Table 4.32).

There is actually no lower limit to the coefficient. The closer Cronbach's alpha coefficient is to 1.0, the greater the internal consistency of the items, hence the responses relative to the research categories for this study. George and Mallery (2003: 231) provide the following rules of thumb towards the Cronbach's alpha value, namely $\geq .9$ – Excellent, $\geq .8$ – Good, $\geq .7$ – Acceptable, $\geq .6$ – Questionable, $\geq .5$ – Poor, and $< .5$ – Unacceptable.

It is notable from Table 4.3.2 that the internal consistencies determined by calculating the value of coefficient alpha (Cronbach's alpha) as a measure of the reliability of the responses received are predominantly good (between 0.8 and 0.9) to excellent (≥ 0.9). This high average correlation among the elements of the questions suggests that they are measuring the same rudiment, i.e. the questions have a high level of internal consistency where the questions within the questionnaire reliably measure the same latent value of the specific questions. Because of the high internal reliability of the sets of items, one score was calculated for each set of items which is the average of the individual item responses. The 'synopsis column' reflects the new names given to the summated scores of the questions.

Table 4.3.2: Results of Cronbach's alpha reliability analysis

Questions	Alpha	Exclusions	Synopsis
Q1a_1 - Q1a_10	0.92		Q1a
Q1b_1 - Q1b_10	0.85		Q1b
Q2a_1 - Q2a_10	0.80	Without Q2a_8	Q2
Q3a_1 - Q3a_18	0.87		Q3
Q4a_1 - Q4a_30	0.93		Q4
Q7a_1 - Q7a_15	0.95		Q7
Q8a_1 - Q8a_15	0.85		Q8
Q9a_1 - Q9a_15	0.94		Q9
Q12a_1 - Q12a_10	0.93		Q12
Q13a_1 - Q13a_15	0.94		Q13
Q13b_1 - Q13b_15	0.95		Q13
Q14a_1 - Q14a_10	0.97		Q14
Q15a_1 - Q15a_7	0.90		Q15
Q16a_1 - Q16a_10	0.98		Q16
Q17a_1 - Q17a_7	0.94		Q17
Q19a_1 - Q19a_15	0.95		Q19
Q21a_1 - Q21a_8	0.93		Q21
Q22a_1 - Q22a_8	0.93		Q22
Q24a_1 - Q24a_8	0.95		Q24
Q26a_1 - Q26a_15	0.91	Without Q26a_8	Q26
Q27a_1 - Q27a_5	0.89		Q27
Q28a_1 - Q28a_20	0.95		Q28

Two elements within two questions were found to be inconsistent internally that appeared to have the least in common with the sum of the remaining items from the specific questions:

- Question 2: Item 8 a – The frequency of occurrence of changes in legislative requirements such as municipal by-laws and building regulations seldom happens. This implies that legislation seldom changes from project inception to project close-out. It is affirmed that changes to legislation will not have a severe impact on the perceived level of project success as the client, PM, consultants nor the contractor can be held accountable for changes in legislation, unless it could have been foreseen during the planning phase, and
- Question 26: Item 8 b – The requirement and support of industry certification for everyone within the supply chain of project implementation is only applicable to the PMs. This means that it is not necessary for everybody within the supply chain to be registered as a PM in order to affirm the extent to which the NDPW has adopted project management as a corporate methodology within the supply chain of implementing projects. It may be advantages to send all the role players within the NDPW on project management courses for

them to become familiar with the project implementation cycles and their contribution to achieving project success.

4.3.3 ANALYSIS OF VARIANCE (ANOVA)

The Analysis of Variance (ANOVA) is used to analyse data to measure the variance between and within variable groups. The ANOVA compares the differences between the means in each group to the differences within each group's observations. From that data, a p-value is obtained for the entire model. If the p-value is greater than the previously chosen critical probability, none of the independent variables are correlated with the dependent variable.

The ANOVA test compares two models, one overall grand mean versus different means for each group by comparing the differences between the means in each group to the differences of the individual values within each group. The one way ANOVA test was employed to evaluate whether the questions have the same means that is presented in Table 4.3.3.

The F-value in the ANOVA table, Table 4.3.3, is essentially the ratio of the variation among groups to the variation within groups. The F test compares the differences between the means in each group to the differences within each group. If the variation among groups is relatively large, compared to the variation within groups, then the F-value will be relatively large. A relatively large F-value suggests that the variation among groups is largely caused by a given variable, in this research, the performance of the NDPW staff and PMs, rather than chance variation due to external factors. If the variation among groups is similar to the variation within groups, the F-value will be relatively small. A relatively small F-value suggests that the difference among groups is largely due to chance variation and measurement error, rather than to a given variable or manipulation.

Table 4.3.3 also contains the associated P-value that ranges from 0 to 1, which is the probability of calculating a given test statistic assuming that the means of the groups are identical. The larger the test statistic is, the lower the chance (P) that an observed difference among groups is due to external causation, and the greater the chance that a difference is due to NDPW staff performances.

Table 4.3.3: ANOVA results of the quantitative questionnaire survey

Q	SS Effect	df Effect	MS Effect	SS Error	df Error	MS Error	F	p	eta- squared	Practical sign
Q1a *	8.156	2	4.078	23.450	81	0.290	14.09	0.0000	0.258	Large
Q1b *	3.132	2	1.566	13.790	81	0.170	9.20	0.0003	0.185	Large
Q2 *	2.345	2	1.173	16.075	81	0.198	5.91	0.0040	0.127	Large
Q3	0.042	2	0.021	10.235	81	0.126	0.16	0.8488	0.004	Small
Q4	1.360	3	0.453	16.422	93	0.177	2.57	0.0592	0.076	Medium
Q7 *	9.749	4	2.437	48.858	112	0.436	5.59	0.0004	0.166	Large
Q8 *	3.112	4	0.778	17.765	112	0.159	4.91	0.0011	0.149	Large
Q9 *	3.928	4	0.982	35.432	112	0.316	3.10	0.0183	0.100	Medium
Q12 *	11.911	4	2.978	31.957	112	0.285	10.44	0.0000	0.272	Large
Q13	1.543	3	0.514	29.026	93	0.312	1.65	0.1838	0.050	Medium
Q13 *	7.402	3	2.467	26.570	93	0.286	8.64	0.0000	0.218	Large
Q14 *	22.057	4	5.514	47.515	112	0.424	13.00	0.0000	0.317	Large
Q15 *	20.527	4	5.132	30.459	112	0.272	18.87	0.0000	0.403	Large
Q16 *	16.393	4	4.098	43.568	112	0.389	10.54	0.0000	0.273	Large
Q17 *	9.338	4	2.335	53.121	112	0.474	4.92	0.0011	0.150	Large
Q19 *	4.198	3	1.399	26.686	93	0.287	4.88	0.0034	0.136	Large
Q21	1.334	3	0.445	26.570	93	0.286	1.56	0.2052	0.048	Medium
Q22	2.789	4	0.697	27.256	112	0.243	2.87	0.0265	0.093	Medium
Q24 *	3.372	3	1.124	22.972	93	0.247	4.55	0.0051	0.128	Large
Q26	0.087	1	0.087	10.525	48	0.219	0.40	0.5320	0.008	Small
Q27	0.380	1	0.380	10.151	48	0.211	1.80	0.1864	0.036	Medium
Q28	0.883	1	0.883	10.978	48	0.229	3.86	0.0553	0.074	Medium
* p-value less than 0.05 - indicates significant at the less than 5% level										

Heading legends

- SS Effect = Sum of squares for the effect
- SS Error = Sum of squares for error
- F = Test statistic
- df Effect = Degrees of freedom for the effect
- df Error = Degrees of freedom for error
- P-value = Probability value
- MS Effect = Mean squares for the effect
- MS Error = Mean squares for error
- Practical sign = Practical significance

Table 4.3.3 table indicates that there is statistically significant difference between the groups that is not related to sampling error. Large differences are present between the respondent groups' means relative to questions 1a, 1b, 7, 8, 9, 12, 13b, 14, 15, 16, 17, 19, and 24 ($p < 0.05$), which necessitates establishing between which of the groups the difference lies. All groups might be different, or perhaps only one of the five groups is statistically different from the others, which is established by conducting the Tukey's honestly significant difference test in Section 4.3.4.

The variance in the respondent groups' means is due to the difference of opinion on the current level of performance by the client representatives, the PMs and the NDPW as an organisation. This is attributed to the fact that respondents assessing their own performances generally overestimate their own performances as advocated by De Angelis (2003: 1). Dunning *et al.* (2005: 78-98) argue that people do not take into account what they do not know or are supposed to be doing, and people are often motivated to reach flattering conclusions about themselves and their place in the world. This subsequent possible negative impact was mitigated through the triangulation of the findings in the final analysis of the research by conducting interviews, workshops and scrutinising outcomes of interventions.

4.3.4 TUKEY'S HONESTLY SIGNIFICANT DIFFERENCE POST HOC TEST

Tukey's honestly significant difference (HSD) test is a single-step multiple comparison procedure and statistical test generally used in conjunction with an ANOVA to find which means are significantly different from one another. Tukey's test is based on a formula very similar to that of the t-test. In fact, Tukey's test is essentially a t-test, except that it corrects for experiment-wise error rate when there are multiple comparisons being made, the probability of making a type I error increases Tukey's test corrects for that, and is thus more suitable for multiple comparisons than doing a number of t-tests would be.

The test compares the means of every treatment to the means of every other treatment; that is, it applies simultaneously to the set of all pairwise comparisons and identifies where the difference between two means is greater than the standard error would be expected to allow. The confidence coefficient for the set, when all sample sizes are equal, is exactly $1 - \alpha$. For unequal sample sizes, the confidence coefficient is greater than $1 - \alpha$. In other words, the Tukey method is conservative when there are unequal sample sizes.

The following Tukey's HSD tests reveal significant differences among the respondent groups:

Table 4.3.4: Tukey HSD test - Variable of Q1a

Variable: Q1a	{1}	{2}	{3}	{4}	{5}
	M=3.1100	M=2.8568	M=0.0000	M=0.0000	M=2.3027
Clients {1}	-	0.5463	-	-	0.0035
Consultants {2}	0.5463	-	-	-	0.0002
Key NDPW staff {3}	-	-	-	-	-
Contractors {4}	-	-	-	-	-
PMs {5}	0.0035	0.0002	-	-	-

The clients (3.11) differ significantly from the PMs (2.30): $p = 0.0035$ as well as the consultants (2.86): $p = 0.0002$.

Question 1a sought to determine the extent to which clients know what their accommodation requirements are at the time of the project briefing. The clients rated their own performance in terms of project briefings significantly higher (3.11) than the PMs (2.30) which can be attributed to the fact that people generally will not rate one's own performance low and secondly that they may be of the opinion that their performance is good within their framework of reference and understanding of their roles and responsibilities toward achieving project success.

Table 4.3.5: Tukey HSD test - Variable of Q1b

Variable: Q1b	{1}	{2}	{3}	{4}	{5}
	M=2.9500	M=3.4784	M=0.0000	M=0.0000	M=3.5784
Clients {1}	-	0.0147	-	-	0.0030
Consultants {2}	0.0147	-	-	-	0.5526
Key NDPW staff {3}	-	-	-	-	-
Contractors {4}	-	-	-	-	-
PMs {5}	0.0030	0.5526	-	-	-

The client (2.95) differs significantly from the PMs (3.58): $p = 0.0030$, and the consultants (3.48): $p = 0.0147$.

Question 1b endeavoured to determine the extent to which PMs are aware of what the client's accommodation requirements are at the time of the project briefing. The client rated the PMs' performance in terms of project briefings significantly lower (2.95) than what the PMs rated themselves (3.58). The consultants' rating (3.48) of the PMs' performance does not differ significantly from that of the PMs' rating (3.58). This could be attributed to the fact that the client representatives are not totally au fait with the project implementation processes and the roles and responsibilities of the respective role players, therefore expecting more from the PMs.

Table 4.3.6: Tukey HSD test - Variable of Q2

Variable: Q2	{1}	{2}	{3}	{4}	{5}
	M=2.7889	M=2.8709	M=0.0000	M=0.0000	M=3.1862
Clients {1}	-	0.9110	-	-	0.1202
Consultants {2}	0.9110	-	-	-	0.0088
Key NDPW staff {3}	-	-	-	-	-
Contractors {4}	-	-	-	-	-
PMs {5}	0.1202	0.0088	-	-	-

The PMs (3.19) differ significantly from the consultants (2.87): $p = 0.0088$.

The frequency of occurrence to which aspects of the project change from project inception to project closeout was determined by question 2. PMs are of the opinion that changes to the project brief occur more often than what both the consultants and the clients' views are. This is attributed to the fact that the maximum by which the original contract amount may be exceeded was reduced from 30% to 20% in 2011. Variation orders on projects have become the norm. Clients use it to change their accommodation needs after the planning has been completed and consultants makes use of variation orders to make up for design or specification flaws and / or omissions.

Table 4.3.7: Tukey HSD test - Variable of Q7

Variable: Q7	{1}	{2}	{3}	{4}	{5}
	M=2.8467	M=2.4973	M=3.4821	M=2.9100	M=2.7604
Clients {1}	-	0.7612	0.2063	0.9996	0.9985
Consultants {2}	0.7612	-	0.0023	0.2846	0.4302
Key NDPW staff {3}	0.2063	0.0023	-	0.1844	0.0484
Contractors {4}	0.9996	0.2846	0.1844	-	0.9524
PMs {5}	0.9985	0.4302	0.0484	0.9524	-

The key NDPW staff (3.48) differ significantly from the consultants (2.50): $p=0.0023$, as well as the PMs (2.76): $p = 0.0484$.

Question 7 sought to determine the frequency of occurrence of the most common causes of project failure in terms of managing projects. The key NDPW staff's belief is that common causes for project failure that have a major impact on achieving project success is more often prevalent (3.48) than that of the contractors (2.91), the clients (2.85), the PMs (2.76) and the consultants (2.50). This is ascribed to the fact the key NDPW staff, although not directly involved on projects, have good insight as to what is happening on projects due to the nature of their work which entails authorization of funds, procuring bids, budget administration, approval of variation orders, authorizing payments and project programme management. They are therefore fully aware of any delays and disruptions on projects whatever the reasons may be.

Table 4.3.8: Tukey HSD test - Variable of Q8

Variable: Q8	{1}	{2}	{3}	{4}	{5}
	M=3.5133	M=3.3063	M=3.3692	M=3.0800	M=3.5405
Clients {1}	-	0.7727	0.9274	0.1142	0.9999
Consultants {2}	0.7727	-	0.9944	0.3806	0.0914
Key NDPW staff {3}	0.9274	0.9944	-	0.3497	0.8080
Contractors {4}	0.1142	0.3806	0.3497	-	0.0036
PMs {5}	0.9999	0.0914	0.8080	0.0036	-

The PMs (3.54) differ significantly from the contractors (3.08): $p = 0.0036$.

The aim of Question 8 was to determine how often the common causes of project failure in terms of implementing projects are present on the NDPW projects. The PMs' rating (3.54) differs significantly from that of the contractors (3.08), but is more aligned with the rating of the consultants (3.31), the key NDPW staff (3.37), and the clients (3.51). This is attributed to the fact that, in terms of implementing projects, the most common causes of project failure that have the highest impact on achieving project success have already influenced the project before the contractor came on board. This is because the contractors is not part of the briefing and planning process and will not be aware of delays and respective performance prior to handing over of the site.

Table 4.3.9: Tukey HSD test - Variable of Q9

Variable: Q9	{1}	{2}	{3}	{4}	{5}
	M=2.6733	M=2.6072	M=2.2667	M=2.2367	M=2.2505
Clients {1}	-	0.9990	0.4900	0.4164	0.4498
Consultants {2}	0.9990	-	0.5367	0.2347	0.0562
Key NDPW staff {3}	0.4900	0.5367	-	0.9999	1.0000
Contractors {4}	0.4164	0.2347	0.9999	-	1.0000
PMs {5}	0.4498	0.0562	1.0000	1.0000	-

Question 9 attempted to establish the clients' contribution toward achieving project success. In this instance the post-hoc test was not strong enough to indicate any significant pairwise differences as to the importance of the clients' contribution toward achieving project success. The contractors rated the lowest (2.24) versus the PMs (2.25), the key NDPW staff (2.27), the consultants (2.60) and the clients (2.67) who rated the clients' level of contribution the highest. This disparity is attributed to the fact that both the consultants and the clients do not fully understand the clients' role and responsibilities and therefore have scored the clients' performance higher because of their terms of reference and the fact that both these groups are of

the opinion that it is expected that the PMs' must take the lead on the clients' requirements and standards.

Table 4.3.10: Tukey HSD test - Variable of Q12

Variable: Q12	{1}	{2}	{3}	{4}	{5}
	M=3.5000	M=2.7108	M=3.1923	M=3.4400	M=2.7649
Clients {1}	-	0.0111	0.6992	0.9992	0.0217
Consultants {2}	0.0111	-	0.1533	0.0004	0.9925
Key NDPW staff {3}	0.6992	0.1533	-	0.7616	0.2540
Contractors {4}	0.9992	0.0004	0.7616	-	0.0012
PMs {5}	0.0217	0.9925	0.2540	0.0012	-

The contractors (3.44) differ significantly from the Dept. PMs (2.77): $p = 0.0012$ and the consultants (2.71): $p = 0.0004$.

Question 12 aimed to establish the frequency of mismatching PMs with the actual requirements of projects. The contractors indicated that PMs are mismatched more often (3.44) than viewed by the consultants (2.71), the PMs (2.77) and the key NDPW staff (3.19). The clients rated the highest (3.50). This is attributed to the fact that all the role players of the project rely heavily on the PMs to manage all aspects of the project effectively and efficiently in terms of procuring suitable consultants and contractors, facilitate proper and comprehensive planning processing payments and variation orders, managing consultants and contractors who are in default as well as general contract administration within the NDPW. It is therefore affirmed that mismatching PMs negatively impacts on project success.

Table 4.3.11: Tukey HSD test; Variable of Q13b

Variable: Q13b	{1}	{2}	{3}	{4}	{5}
	M=2.6000	M=3.2739	M=2.5179	M=0.0000	M=3.0144
Clients {1}	-	0.0296	0.9861	-	0.3124
Consultants {2}	0.0296	-	0.0029	-	0.1647
Key NDPW staff {3}	0.9861	0.0029	-	-	0.0906
Contractors {4}	-	-	-	-	-
PMs {5}	0.3124	0.1647	0.0906	-	-

The consultants (3.27) differ significantly from the clients (2.60): $p = 0.0296$ and the key NDPW staff (2.52): $p = 0.0029$.

Question 13b endeavoured to establish the level of the PMs' performance in terms of carrying out key project management activities to achieve project success. PMs were of the opinion that the level at which they perform key project management activities is adequate (3.01) while the

key NDPW staff and clients thought it to be inadequate (2.52 and 2.60 respectively), while the consultants rated the PMs' performance the highest (3.23).

The inequality between the consultants and the clients is attributed to the fact that the consultants are not fully aware as to how the PMs actually monitor and report progress which is relayed to the client at client forum meetings. The report may reflect the progress while reality on site is the opposite. Once again the key NDPW staff rated the lowest as they are privileged to the majority of the key activities to be performed by the PM. Poor management, or lack thereof, during planning or on site reflect in the expenditure and progress reports of the PMs.

Table 4.3.12: Tukey HSD test - Variable of Q14

Variable: Q14	{1}	{2}	{3}	{4}	{5}
	M=2.8900	M=3.5622	M=2.3000	M=2.8150	M=3.4730
Clients {1}	-	0.1503	0.2608	0.9991	0.2722
Consultants {2}	0.1503	-	0.0001	0.0040	0.9765
Key NDPW staff {3}	0.2608	0.0001	-	0.2653	0.0002
Contractors {4}	0.9991	0.0040	0.2653	-	0.0154
PMs {5}	0.2722	0.9765	0.0002	0.0154	-

The consultants (3.56) differ significantly from the key NDPW staff (2.30): $p = 0.0001$ and the contractors (2.82): $p = (0.0040)$. The PMs (3.47) differ significantly from the key NDPW staff (2.30): $p = 0.0002$ and the contractors (2.82): $p = 0.0154$.

The aim of Question 14 was to determine whether the NDPW's PMs possess the key qualities that a PM should have. The result indicated that the consultants rated the PMs' abilities the highest (3.56), the PMs the second highest at 3.47, the contractors at 2.82, the clients at 2.89 and the key NDPW staff again the lowest at 2.3. This vast disparity in the ratings aligns with the findings of Questions 7 and 13 which is ascribed to the fact that the roles and responsibilities of the PMs and the consultants are not clearly defined as some role players are of the opinion that the principal agents must do everything and that certain PMs pass their responsibilities onto the principal agent. Interviews affirmed that the certain PMs tend to blame the consultants, the contractor and the client for everything without actually proving their own commitment and effort to manage arising problems.

The key NDPW staff, on the other hand is quite aware of the PMs' roles and responsibilities and their actual performance based on the planning meetings' feedback and reporting on the collective of the individual PM's project portfolios, hence the lower rating.

Table 4.3.13: Tukey HSD test - Variable of Q15

Variable: Q15	{1}	{2}	{3}	{4}	{5}
	M=2.8429	M=3.5019	M=2.0879	M=2.9571	M=2.9382
Clients {1}	-	0.0436	0.0136	0.9882	0.9941
Consultants {2}	0.0436	-	0.0001	0.0111	0.0002
Key NDPW staff {3}	0.0136	0.0001	-	0.0005	0.0007
Contractors {4}	0.9882	0.0111	0.0005	-	1.0000
PMs {5}	0.9941	0.0002	0.0007	1.0000	-

The consultants (3.50) differ significantly from the key NDPW staff (2.10): $p = 0.0001$, the PMs (2.94): $p = 0.0002$, the contractors (2.96): $p = (0.0111)$ as well as the clients (2.84): $p = 0.0436$. The key NDPW staff (2.09) also differ significantly from the contractors (2.96): $p = 0.0005$, the PMs (2.94): $p = 0.0007$ as well as the clients (2.84): $p = 0.0136$.

Question 15 sought to determine whether PMs actually take time to foster key project management skills. The consultants rated the PMs the highest at 3.50, while the key NDPW staff rated the PMs the lowest (2.09). The differentiation in the ratings is attributed to the fact that the key NDPW staff are directly involved in the project programme management of all the projects within the regional offices where they have first-hand information relative to the performance of each PMs' performance in terms of their individual project portfolios. Interviews affirmed that the key NDPW staff's assessments is then based on the sum of the collective, whereas clients, contractors and consultants only rate on the odd project where they are directly involved with the specific PM who therefore can only base their assessments on individual projects and not the specific PMs' portfolio of projects. A PM might perform very well on one project and poorly on the next, which will not be reflected by the individual groups which is affirmed by the average standard deviation of 0.66.

Table 4.3.14: Tukey HSD test - Variable of Q16

Variable: Q16	{1}	{2}	{3}	{4}	{5}
	M=2.6000	M=3.2486	M=2.0846	M=3.2800	M=2.9378
Clients {1}	-	0.1446	0.3519	0.1130	0.7450
Consultants {2}	0.1446	-	0.0002	0.9999	0.2094
Key NDPW staff {3}	0.3519	0.0002	-	0.0001	0.0063
Contractors {4}	0.1130	0.9999	0.0001	-	0.4171
PMs {5}	0.7450	0.2094	0.0063	0.4171	-

The key NDPW staff (2.09): differ significantly from the contractors (3.28): $p = 0.0001$, the consultants (3.25) $p = 0.0002$ and the PMs (2.94): $p = 0.0063$.

Question 16 endeavoured to establish the extent to which the NDPW PMs have developed as managers. The clients rated the lowest (2.60) followed by the key NDPW staff (2.08) then by the PMs (2.94), the consultants at 3.25, and the contractors with the highest rating of 3.28. The discrepancy in the ratings was affirmed in interviews with the respective respondents that not all PMs are poor managers, which is confirmed by the large standard deviations. The key NDPW staff, who consist of the PMs' support staff, key account managers and office managers whom all form part of the supply chain, have direct insight in PMs' abilities to manage projects through their respective programme management functions. The clients on the other hand often report on poor performance of PMs at client form meetings, hence the lowest rating of 2.60. Interviews also highlighted the fact that the senior PMs who are also appointed in supervisory capacities, tend to manage their projects substantially better than their subordinate PMs.

Table 4.3.15: Tukey HSD test - Variable of Q17

Variable: Q17	{1}	{2}	{3}	{4}	{5}
	M=3.1429	M=2.9537	M=2.1319	M=3.0429	M=3.0270
Clients {1}	-	0.9726	0.0118	0.9976	0.9958
Consultants {2}	0.9726	-	0.0240	0.9941	0.9909
Key NDPW staff {3}	0.0118	0.0240	-	0.0090	0.0108
Contractors {4}	0.9976	0.9941	0.0090	-	1.0000
PMs {5}	0.9958	0.9909	0.0108	1.0000	-

The key NDPW staff (2.13) differ significantly from the contractors (3.04): $p = 0.0090$, the PMs (3.03): $p = 0.0108$, the clients (3.14): $p = 0.0118$, and the consultants (2.95): $p = 0.024$.

The respondents had to indicate the extent to which the PMs have mastered key project management traits in Question 17. The clients rated the highest (3.14), followed by the contractors (3.04), the PMs (3.03), then the consultants at 2.95, and the lowest the key NDPW staff at 2.13. The vast discrepancy between the key NDPW staff and the other respondents is attributed to the fact that the key NDPW staff work very closely with the PMs and are privileged to inside information the other respondents are not which by implication means that the key NDPW staff have a more holistic view of the PMs' performance.

Table 4.3.16: Tukey HSD test - Variable of Q19

Variable: Q19	{1}	{2}	{3}	{4}	{5}
	M=3.6533	M=3.0108	M=2.9385	M=0.0000	M=3.2505
Clients {1}	-	0.0424	0.0188	-	0.3392
Consultants {2}	0.0424	-	0.9859	-	0.2252
Key NDPW staff {3}	0.0188	0.9859	-	-	0.4507
Contractors {4}	-	-	-	-	-
PMs {5}	0.3392	0.2252	0.4507	-	-

The clients (3.65) differ significantly from the consultants (3.01): $p = 0.0424$ and the key NDPW staff (2.94): $p = 0.0188$.

Question 19 aimed to establish to what extent, on typical NDPW projects, do common causes of project failure prevail in terms of organisational readiness for project implementation. The clients rated the highest (3.65), followed by the PMs (3.25) and the consultants (3.01), with the key NDPW staff rating the lowest at 2.94. It is quite evident that the common causes of project failure are often present on the NDPW's projects. The difference between the clients and the remainder of the respondents is that the clients' framework for assessing projects generally only includes time and cost slippages and the annual under expenditure, whereas the other respondents have a more holistic view of also considering organisational issues within the supply chain and project implementing processes.

Table 4.3.17: Tukey HSD test - Variable of Q22

Variable: Q22	{1}	{2}	{3}	{4}	{5}
	M=4.5875	M=4.3074	M=4.5577	M=4.4250	M=4.6791
Clients {1}	-	0.7104	0.9999	0.9475	0.9938
Consultants {2}	0.7104	-	0.6959	0.9432	0.0135
Key NDPW staff {3}	0.9999	0.6959	-	0.9592	0.9704
Contractors {4}	0.9475	0.9432	0.9592	-	0.4826
PMs {5}	0.9938	0.0135	0.9704	0.4826	-

The PMs (4.68) differ substantially from the consultants (4.31): $p = 0.0135$.

The rationale of Question 22 was to establish the main purpose of evaluating projects more comprehensively and its necessity to improve service delivery. The PMs rated the highest (4.68), followed by the clients (4.59), the key NDPW staff (4.56), then the contractors (4.43) and the consultants with the lowest rating of 4.31. Although all respondents were strongly in agreement that projects should be evaluated more stringently some of the consultants also felt threatened as it would mean that their performance will also be evaluated which could be to their

detriment for future appointments. This is also confirmed by the fact that the consultants have the largest standard deviation (0.63) of all the respondent groups. The other respondent groups were more of the opinion that stringent project evaluation will encourage all role players to improve their participation and performance thereby improving the chances of achieving project success and client satisfaction.

Table 4.3.18: Tukey HSD test - Variable of Q24

Variable: Q24	{1}	{2}	{3}	{4}	{5}
	M=4.5875	M=4.2466	M=4.6827	M=0.0000	M=4.6182
Clients {1}	-	0.4218	0.9735	-	0.9991
Consultants {2}	0.4218	-	0.1210	-	0.0096
Key NDPW staff {3}	0.9735	0.1210	-	-	0.9875
Contractors {4}	-	-	-	-	-
PMs {5}	0.9991	0.0096	0.9875	-	-

The PMs (4.62) differ significantly from the consultants (4.25): $p = 0.0096$.

The objective of Question 24 is to ascertain whether establishing a formal PMO / PSO within the regional offices will aid the NDPW in becoming a project competent organisation and to improve service delivery where project success will become the norm. The key NDPW staff agreed the most (4.68) followed by the PMs (2.62), then the clients (4.59) with the consultants rating the lowest (4.25). Although strongly in agreement that a PMO / PSO will improve the NPW's performance as an organisation some consultants thought it would be another watchdog to assess their performance as consultants. Both the PMs and the key NDPW staff on the other hand thought it would be good to standardise the way projects are implemented and they would then be assisted in addressing problems within the supply chain while they could concentrate on their core functions which is to manage projects.

4.3.5 PEARSON'S PRODUCT MOMENT COEFFICIENT

The Pearson product-moment correlation coefficient is a measure of the strength of a linear association between two variables and is denoted by r . Basically, a Pearson product-moment correlation attempts to draw a line of best fit through the data of two variables, and the Pearson correlation coefficient, r , indicates how far away all these data points are to this line of best fit, i.e. how well the data points fit this new model / line of best fit. The Pearson's product moment coefficient correlation amongst factors result table is attached as Appendix D.

The Pearson correlation coefficient, r , can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 indicates a negative association, that is, as the value of one variable increases the value of the other variable decreases.

Laerd Statistics (2012: 2) proposes the following guideline when using the correlation coefficient as illustrated in Table 4.3.19.

Table 4.3.19: Guidelines for using the correlation coefficient (Laerd Statistics, 2012: 2)

Strength of association	Coefficient, r	
	Positive	Negative
Small	0.1 to 0.3	-0.1 to -0.3
Medium	0.3 to 0.5	-0.3 to -0.5
Large	0.5 to 1.0	-0.5 to -1.0

The stronger the association of the two variables the closer the Pearson correlation coefficient, r , will be to either +1 or -1 depending on whether the relationship is positive or negative, respectively. Achieving a value of +1 or -1 means that all the data points are included on the line of best fit - there are no data points that show any variation away from this line. Values for r between +1 and -1 (for example, $r = 0.8$ or -0.4) indicate that there is variation around the line of best fit. The closer the value of r to 0 the greater the variation around the line of best fit.

Pearson product-moment correlation coefficients were computed where the strength of the association of coefficient (r) was large, i.e. positive ≥ 0.5 to 1.0 and / or negative ≥ -0.5 to -1.0. For the purpose of this research certain correlations with strength of association values of ≥ 4.5 were deemed to be equal to a value of 5.0, both in the positive and negative.

Q1a versus Q1b: There is a positive correlation between the two variables of whether the client representatives have sound knowledge of what their accommodation requirements are at the project inception (briefing) stage, and whether the PMs are generally more informed of the anticipated project outcomes ($r = 0.58$, $n = 84$, $p = 0.0035$). Increased effectiveness of the project brief will increase the understanding of the project objectives and outcomes by the PMs and the rest of the project team.

Q1a versus Q2: There is a strong negative correlation between the two variables of whether the client representatives have sound knowledge of what their accommodation requirements are at the project inception (briefing) stage, and the extent to which the scope changes from project

inception to the closeout on projects as well as the level of impact on the perceived level of project success and client satisfaction ($r = -0.72$, $n = 84$). A decrease in the clients' knowledge of the project requirements at the project briefing will increase the amount of scope changes throughout the project phases that will also lead to project failure and decreased client dissatisfaction.

Q1b versus Q21: There is a positive correlation between the two variables of whether the PM is aware of the clients' needs, project objectives and anticipated project outcomes, and the extent to which the performance of the organisation is measured ($r = 0.50$, $n = 97$). Increased (constructive) performance measuring will improve the performance of the PMs and the organisation.

Q2 versus Q3: There is a negative correlation between the two elements of whether key elements of the project brief are addressed adequately and the extent of scope changes from the project brief to project close out ($r = -4.8$, $n = 84$). The extent to which key elements of the project brief is addressed during the project briefing has a direct bearing on the extent of scope changes throughout the project life cycle, i.e. the more comprehensive the project brief the less scope changes can be expected.

Q2 versus Q4: There is a positive correlation between the factors that drive changes to the construction brief and the extent to which aspects of the project brief changes during the project life cycle ($r = 0.52$, $n = 97$). An increase in factors that drive change to the project brief will increase the extent to which the scope changes from the project briefing to project closeout thereby obstructing project success and increasing client dissatisfaction.

Q2 versus Q14: There is a strong negative correlation between the qualities that the NDPW PMs portray and the extent to which aspects of the project changes from the project brief to project closeout ($r = -61$, $n = 117$). Decrease in the desired qualities a of PM will increase the extent to which aspects of the project changes from the project brief to project closeout, thereby impeding project success and increasing client dissatisfaction.

Q2 versus Q15: There is a negative correlation between the two variables of whether the NDPW PMs take the time to foster key project management skills, and the extent to which aspects of the projects change from the project brief to project closeout ($r = -4.8$, $n = 117$). The less the PMs develop key project management skills the more changes will occur from the project brief to the project closeout leading to project failure and client dissatisfaction.

Q2 versus Q 16: There is a negative correlation between the two variables of whether PMs develop themselves as managers, and the extent to which aspects of the projects change from the project brief to project closeout ($r = - 4.7$, $n = 117$). The less the PMs develop their own managerial skills the more changes will occur from the project brief to the project closeout leading to project failure and client dissatisfaction.

Q3 versus Q16: There is a positive correlation between the two variables of whether PMs develop themselves as managers, and the extent to which key elements of the project briefing are addressed ($r = 4.5$, $n = 117$). The more the PMs develop their own managerial skills the more thorough will the project briefings be as the PM will ensure that all key elements of the project brief is fully addressed or addressed at least adequately to deter scope changes.

Q4 versus Q7: There is a strong positive correlation between the factors that drive changes to the construction brief, and the most common causes of project failure and ($r = 0.65$, $n = 117$). An increase in factors that changes the project brief increases the common causes of project failure which then leads to project failure and client dissatisfaction.

Q4 versus Q9: There is a negative correlation between the two variables of the clients' contribution toward project success, and the factors that drive changes to the construction brief ($r = -0.51$, $n = 117$). A decrease in the client's contribution will increase the factors that drive changes to the project brief.

Q4 versus Q22: There is a positive correlation between the purpose of measuring performance, and the presence of factors that drive changes to the construction brief ($r = 0.47$, $n = 117$). Improved measurement of performance of the PMs will increase client satisfaction as the PMs will perform better by eliminating factors that drive change from the project brief.

Q7 versus Q8: There is a positive correlation between the most common causes of project failure in terms of managing projects and implementing projects ($r = 0.57$, $n = 117$). Improving the means by which projects are managed will improve the manner in which they are implemented.

Q8 versus Q9: There is a negative correlation between the client's contribution toward achieving project success, and the extent to which the most common causes of failure are present ($r = -$

0.50, $n = 117$). A decrease in the client's contribution will increase project failure and client satisfaction.

Q9 versus Q14: There is a positive correlation between the qualities of the NDPW's PMs, and the client's contribution toward achieving project success ($r = 0.46$, $n = 117$). A PM with good PM qualities will facilitate client participation and contribution thereby increasing the chances of project success and client satisfaction.

Q9 versus Q19: There is a negative correlation between the most common causes of project failure in terms of the NDPW's organisational readiness to implement projects and the importance of the clients' contribution towards achieving project success ($r = -0.55$, $n = 117$). Increase in organisational efficiency will decrease the extent to which the client has to be involved on the project. This is specifically aimed at accommodation requirements and standards, i.e. an increase in understanding the client's needs and standards reduces the need for the client to explain everything. The opposite is where the client representative is fully *au fait* with their needs and standards, which then reduces the need for the NDPW PM to know and convey everything to the project team. The problem arises when the client representatives and the PMs themselves are not familiar with the standards and requirements.

Q9 versus Q24: There is a negative correlation between the key activities to be performed by a PMO / PSO and the level of the client's involvement in the planning stages of the project ($r = -0.50$, $n = 97$). An increase in the PMO / PSO capabilities and support to the PM will reduce the extent to which the client must be involved on projects as the PMO / PSO will be fully abreast with the client's requirements and standards.

Q12 versus Q26: There is a negative correlation between the implications of mismatching PMs, and the extent to which the NDPW has adopted best practises in their approach to establish project management as the corporate methodology where everyone within the supply chain understands their contribution toward achieving project success ($r = -0.49$, $n = 50$). An increase in adopting best practises will reduce the necessity to match PMs as the PM will have full support from the rest of the supply chain which will reduce the risk of project failure.

Q12 versus Q27: There is a negative correlation between the implications of mismatching PMs and the extent to which the NDPW has developed procedures to resolve and address issues pertaining to cultural differences ($r = -0.53$, $n = 50$). An increase in matching PMs with projects will diminish the necessity of having to address cultural differences on projects.

Q13a versus Q13b: There is a strong positive correlation between the frequency by which PMs perform project management activities and their level of performance ($r = 0.86$, $n = 97$). An increase in performing project management activities will increase the PMs' performance levels (if they heed lessons learnt).

Q13a versus Q15: There is a positive correlation between the frequency of performing key PM activities, and the time taken by PMs to foster their skills ($r = 0.52$, $n = 97$). An increase in performing key PM activities will increase the fostering of project management skills.

Q13a versus Q16: There is a positive correlation between the frequency of performing key project management activities, and the extent to which they have developed as managers ($r = 0.65$, $n = 97$). An increase in PM key activities will increase PMs' abilities as managers.

Q13b versus Q15: There is a positive correlation between the level at which PMs perform, and the time taken by PMs to foster their skills ($r = 0.53$, $n = 97$). An increase in fostering skills will improve the PMs' performance.

Q13b versus Q16: There is a positive correlation between the level at which PMs perform, and the extent to which they have developed as managers ($r = 0.75$, $n = 97$). An increase in PMs' abilities as managers, will improve the PMs' performance.

Q14 versus Q15: There is a positive correlation between the qualities that PMs portray, and the time taken to foster key project management skills ($r = 0.54$, $n = 97$). An increase in time taken to foster skills will increase the key qualities PMs should possess.

Q15 versus 16: There is a positive correlation between the time taken to foster key project management skills, and the extent to which PMs have developed as managers ($r = 0.54$, $n = 97$). An increase in time taken to foster skills will increase the PMs' abilities as managers.

Q 17 versus Q19: There is a negative correlation between the extent to which PMs have mastered key PM traits, and the common causes of project failure in terms of organisational readiness for project implementation ($r = -0.48$, $n = 97$). An increase in mastering key PM traits will reduce the occurrence of the common causes of project failure in terms of organisational readiness for project implementation (if the PMs get the support of management).

Q 17 versus Q26: There is a positive correlation between PMs mastering project management traits and the extent to which the NDPW has adopted best practises in their approach to establish project management as the corporate methodology where everyone within the supply chain understands their contribution toward achieving project success ($r = -0.5$, $n = 50$). An increase in mastering key project management traits will reduce the necessity to establish best practises as project management will be instilled as the corporate methodology while the traits are developed.

Q19 versus Q21: There is a positive correlation between the purpose of measuring the performance of an organisation, and organisational readiness for project implementation ($r = 50$, $n = 97$). An increase in measuring the performance of an organisation will increase organisational readiness for project implementation as long as lessons learnt are heeded, which unfortunately is not the case within the NDPW.

Q21 versus Q24: There is a strong positive correlation between establishing a PMO / PSO within each regional office and the purpose of measuring the performance of an organisation ($r = 0.83$, $n = 97$). Establishing a PMO / PSO in each regional office will improve the measurement of performance of the organisation.

Q21 versus Q26: There is a negative correlation between the extent to which the NDPW has adopted best practices in their approach to establish project management as the corporate methodology where everyone in the supply chain understands their contribution toward project success, and the measuring of performance of an organisation ($r = 0.49$, $n = 50$). Increase in adopting project management as the corporate methodology will reduce the extent to which the performance of the organisation will have to be measures as project will become the norm.

Q22 versus Q24: There is a strong positive correlation between establishing a PMO / PSO within each regional office, and the purpose of evaluating project ($r = 0.89$, $n = 97$). Establishing a PMO / PSO in each regional office will improve the evaluation of projects as it will be one of its core functions.

Q26 versus Q27: There is a strong positive correlation between the extent to which the NDPW has adopted best practices in their approach to establish project management as the corporate methodology where everyone in the supply chain understands their contribution toward project success, and the extent to which the NDPW have developed procedures to resolve cultural differences and related issues timely and swiftly ($r = 0.74$, $n = 50$). An increase in adopting

project management as the corporate methodology will increase harmony among the different cultures as issues will be seen as what they are and not personalised.

Q26 versus Q28: There is a strong positive correlation between the extent to which the NDPW has adopted best practices in their approach to establish project management as the corporate methodology where everyone in the supply chain understands their contribution toward project success, and the extent to which key aspects of project implementation within the NDPW are being assessed ($r = 0.80$, $n = 50$). An increase in adopting project management as the corporate methodology will increase the extent to which key aspects of project implementation within the NDPW are being assessed.

Q27 versus Q28: There is a positive correlation between the extent to which key aspects of project implementation within the NDPW are being assessed, and the extent to which the NDPW have developed procedures to resolve cultural differences and related issues timely and swiftly ($r = 0.51$, $n = 50$). An increase in the extent to which key aspects of project implementation within the NDPW are being assessed will increase harmony among the different cultures as issues will be seen as what they are and not personalised. Personnel will then realise it is not about the person, but the business processes that should be followed, think issue, not person.

4.4 ANALYSIS OF RESPONSES TO THE QUALITATIVE DATA

Question 5: To what extent does an inadequate project brief contribute to client dissatisfaction?

Table 4.4.1 illustrates that slightly more than half of the respondents (58.8%) indicated that inadequate project briefings have a major impact on client satisfaction, while 41.2% were of the opinion that they have a substantial impact.

Table 4.4.1: The impact of inadequate project briefings on client dissatisfaction ($n = 100$)

Group	Degree of impact		n
	Substantial	Major	
Clients	3	7	10
Consultants	21	16	37
Key NDPW staff	3	10	13
PMs	13	24	37
All Groups	40	57	97
Percentage	41.2	58.8	100

Respondents were requested to elaborate on the impact of an inadequate project brief. Comments include, *inter alia*:

- “Inadequate briefing frequently or always results in client dissatisfaction with their buildings”
- “An effective client briefing process is crucial to the attainment of client objectives with respect to cost, time, and quality for construction projects”
- “The NDPW PM is mainly responsible for the incomplete project brief as they are the implementing agents on behalf of the clients while the client is partly responsible for the current level of client dissatisfaction with their buildings”
- “The client representatives, and the NDPW PM, must be able to communicate their needs and project objectives at the briefing meeting. Objectives such as building requirements, budgets, time limits and any other social objectives must be clearly defined by the client and / or the PM”
- “Inadequate briefing is the main reason for misunderstandings between the client, the PM and the design team, time delays, possible fruitless expenditure because of aborted designs and / or work, wasted resources or not serving the purpose for what it was designed for”
- “Problem areas are often related to the experience level of the client and / or the PM and the respective organisations’ internal politics and red tape”
- “The client’s role is not always clearly defined which often leads to communication breakdowns”
- “Both the clients and / or the PMs often do not participate in the briefing process in the most effective manner and regularly attend the meetings unprepared or uninformed which is attributed to their lack of understanding the briefing process and the combination of experience and technical knowledge”
- “Barriers to effective communication between participants to the briefing process and the clients’ ability to communicate project requirements to the project team also appear to exist which include culture and language differences, exposure, experience, knowledge of subject matter, roles and responsibilities, and the individual’s actual commitment to the project. These barriers must be addressed adequately by the PM as it may negatively impact on the perceived level of client satisfaction”
- “Often it becomes the responsibility of the consultants to assist clients and or the PMs in the clarification of the project objectives”
- “Some of the main barriers to effective briefing include vagueness on the part of the client in terms of requirements, insufficient time being devoted to the briefing process, briefing

team members being under-qualified for their roles, and inadequate guidance being given by the principal agent and PM where applicable”

- “There is often a lack of understanding about the design and construction processes”
- “Both clients and PMs frequently fail to provide a comprehensive list of their project requirements and it would appear if the briefing is done as a formality upon which everything is left to the design team to resolve and attempt to resolve with the client”
- “There seem to be consensus among the PM respondents that clients are inexperienced with respect to their roles and responsibilities in the design, procurement and construction processes. Clients are often inflexible and reluctant to accept advice from their professional consultants or the PMs”, and
- “Various PMs and clients cannot conceptualise drawing proposals.”

Question 6: To what extent must the NDPW’s project briefings be improved?

Table 4.4.2 illustrates that 3.7% of the respondents indicated that no improvement to the NDPW’s project briefings is required, 21.4% very little improvement, 44.1% moderate improvement, 19.1% substantial improvement, and 11.9% major improvement, in order to improve on the success rate of their projects and to reduce cost, and to mitigate creep on projects in terms of scope and time.

Table 4.4.2: The extent to which the NDPW’s project briefing should be improved (n = 100)

Improvement required	Response (%)
None	3.7
Very little	21.4
Moderate	44.5
Substantial	19.5
Major	11.9

Overall, it is evident that room for improvement exists in the briefing process to be more effective to impact positively on the attainment of client objectives and ultimately client satisfaction. The following suggestions were made:

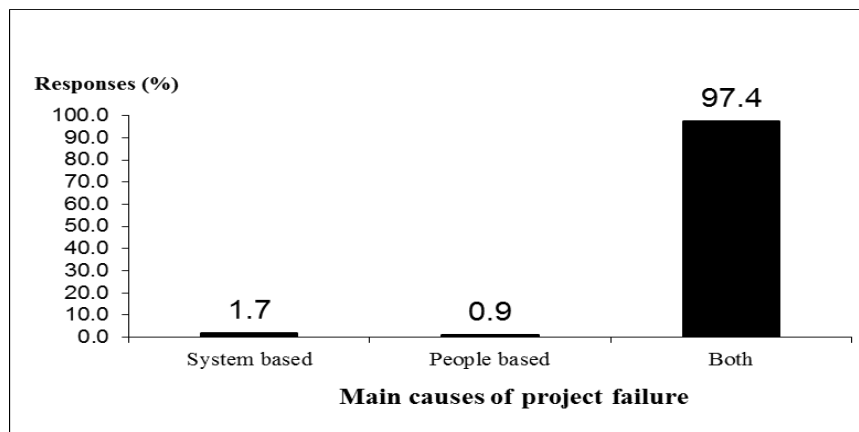
- “An oral project brief must at least be followed up with a written, well-formulated, comprehensive, and unambiguous brief”
- “Clients must assume responsibility for initiating, directing and maintaining effective communication during the briefing process as they tend to rely too much on the NDPW PM. The PM is only supposed to manage the processes”

- “Clearly define the client's role within the briefing process and establish communication structures”
- “Some quantity surveyors indicated that the briefing process could be improved by the early appointment of an architect or PM to elicit the required input from the client and to initiate appropriate debate. A clear understanding can then be generated with the client prior to the briefing regarding their actual needs and requirements, space and cost norms, building costs, mitigate unrealistic expectations clients' inability to convey their actual needs”
- “The PM must promote total transparency in the briefing process as it could become a barrier to communication between clients and consultants, whether deliberate or accidental”
- “All role-players must attend the briefing meeting. Both the client and the PM must attend the briefing meeting and come well prepared as this has become an issue of late;
- “Client organisations need to define their needs more clearly and communicate these requirements to procurement team members unambiguously”
- “Clients to be sensitized in terms of their role within the briefing process as well as their ability to influence the outcome of a project”, and
- “There was a general consensus among the PMs that clients need to be better educated with regard to the design and construction processes. In addition, there should be more effective management of cost, time, and quality, and that communication channels should be more clearly defined especially within the client's organisational structures”.

Question 18: Is the cause of project failure in terms of cost, scope, time, and quality creep and social objectives more system based (red tape in departmental procurement methodology) or a people based (organisational, PMs, consultants, contractors) or a combination or both?

Figure 4.4.1 illustrates that 97.4% of the respondents were of the opinion that the root cause for the vast amount of project failures within the NDPW is attributed to both the system and the people. There appears to be consensus that there should be stringent business processes to deter fraud, but it should be streamlined to reduce cost and time slippages and wasting valuable human resources. Comments received highlighted the fact that it is rather more the people within the system that makes the system complicated and unmanageable. More specifically the employee's' qualifications, experience, competencies and general attitude, placement, and commitment toward rendering a service is what is really hampering project implementation.

Figure 4.4.1: The root cause for project failure within the NDPW (n =117)



Interviews with various respondents revealed that the incorrect implementation of the South African government's affirmative action policy since 1994 has negatively impacted on service delivery to a major extent. The real reason being is that people are employed in positions without being suitably qualified and / or having suitable experience to match the post requirements.

Furthermore, once in these positions, they generally have total disregard for the greater good of service delivery, and policy makers develop new policies without testing same or considering the impact they would have on other facets of service delivery which result in either conflicting policies as in the case of the Public Finance Management Act versus the Treasury Regulations, or policies that cannot be implemented due to impracticalities and negative consequences.

There appears to be a total lack of policy integration that has a direct impact on the project implementation cycle within the NDPW, especially within the supply chain. This causes major delays in appointing suitably qualified and experienced consultants, completing project planning, appointing suitably qualified and experienced contractors and managing projects up to final completion and close-out of the project. It is considered to be a miracle to complete even just one project successfully within the NDPW when adding poor client representation and the appointment of unsuitable consultants and inappropriate contractors to the scenario.

More often than not it is the NDPW's head office that causes major delays due to lengthy turnaround times in decision making, indecision, inconstant decision making, and ambiguity of instructions, directives and policies that impact negatively on service delivery in terms of implementing projects. Furthermore, various respondents indicated that there is no longer any discipline and the majority of public servants no longer have pride in what they are doing. The

idea of being a public servant in its real context is now something of the past. The sense of mutual respect, urgency and adding value is replaced by self-righteousness and complacency. Racism is no longer just between black and white, but even among the same ethnic groups.

Achieving social objectives now takes preference over service delivery. Such cases generally end up in termination of contracts with the original contractor to re-appoint another 'unsuitably qualified' contractor. The end result is that the project is completed 12 to 24 months after its original completion date at double the cost of which the end product is of a lesser standard which is accepted for the sake of closing out the project. Project success has now been replaced by cost, scope, time, and quality slippages, which have become the norm on the majority on the NDPW's projects.

Appendix E illustrates the frequency of occurrence of the more predominant delays (n = 108) that have been monitored over a period of five years while conducting this study and being actively involved in the programme management of the projects within the Port Elizabeth regional office of the NDPW. It is evident from Appendix E that the frequency of occurrence of delays is often to very often (mean MS 3.50), which reaffirms the fact that poor service delivery within the NDPW is both people and systems based.

Question 25: The following questions are applicable to the Construction Industry Development Board (cidb):

Q25.1 In what manner are contractors being assessed when registering with the cidb?

The general consensus is that contractors apply to the cidb for registration whereby they need to provide proof of previous projects; letter of good standing; tax clearance certificate and annual turnover. The application is then assessed only in terms of the documentation. No physical inspections are conducted or references contacted to enquire about the contractor's past and present performance. The same applies when a contractor applies for a higher grading.

Q25.2 Currently, when updating the cidb progress report the contractor is only assessed in terms of whether the project was completed on time, within budget and within the set quality parameters by indicating "Yes" or "No" to each one of the factors. Do you think this type of assessment is sufficient or should more pertinent questions be asked? If yes, please list a few aspects you would prefer contractors to be assessed on upon completion of a project.

It is apparent that the majority of the respondents indicated that the present assessment in terms of cost, time, and quality is totally insufficient. A number of elements for assessment emanated from the questionnaires and follow-up interviews where respondents indicated that cidb contractors should also be assessed in terms of:

- Programming of works;
- Completed project within original contract period;
- Causes of delays;
- Penalties imposed;
- Quality;
- Extent of reworks;
- Within budget;
- Reasons for exceeding budget;
- Health and safety compliance;
- Reaction on contract instructions;
- Known cash flow problems;
- Payment of suppliers;
- Level of subcontracting;
- Payment of subcontractors and local labour;
- Turnover in subcontractors and local labour;
- Problems experienced with subcontractors;
- Coordinating and managing subcontractors, and
- General contract administration.

Other suggestions also included whether the contractor could be recommended for the following types of projects, to cite a few examples:

- Major construction new works (> R30 Million);
- Major construction new works (R15 Million to R30 Million);
- Construction new works (R10 Million to R15 Million);
- Construction new works (R5 Million to R10 Million);
- Construction new works (R500k to R5 Million);
- Construction new works (Less than R500k);
- Repairs and renovations projects (> R30 Million);
- Repairs and renovations projects (R15 Million to R30 Million);
- Repairs and renovations projects (R10 Million to R15 Million);

- Repairs and renovations projects (R5 Million to R10 Million);
- Repairs and renovations projects (R500k to R5 Million);
- Repairs and renovations projects (< R500k);
- Repairs and renovations projects - Heritage buildings;
- Repairs and renovations projects - Buildings occupied, and
- Repairs and renovations projects - Buildings unoccupied.

The purpose of this question is not to develop new assessment criteria, but to indicate that the present cidb assessment criteria are inadequate which should be expanded to include more elements to assess the contractor's performance more constructively.

The problem though is how to objectively evaluate a contractor's performance when the person evaluating the performance may be driven by subjective issues for example a claims orientated contractor is likely to be scored a lower score than a more accommodating contractor even if the former produces better work. This problematic situation warrants further investigation and research which does not form part of this research.

Q25.3 Are the majority of the contractors that are registered with the cidb suitably graded?

The general opinion is that the majority of the contractors have been graded correctly. There are a few contractors who have either been over or under assessed. Major problems are experienced with the contractors that have been over assessed, i.e. received a higher grading than their actual experience and capabilities which is one of the biggest causes of project failure within the NDPW, especially projects below the R10Million value.

Q25.4 What are the potential benefits for a client making use of cidb registered contractors?

The potential benefit of making use of cidb registered contractors is that contractors, which are suitably graded should be able to complete a project of the applicable grade level without any problems in terms of cost, H&S on site, time, quality, cash flows, labour and subcontractor disputes and payment of local suppliers and labour.

If contractors were properly assessed and suitably registered it could be a helpful as prospective clients can then use the cidb register as a data base for sourcing contractors for specific projects.

Some respondents did indicate that there are no potential benefits because with the current system in place, contractors are not graded according to their specific skills and therefore add no benefit to the client.

Q25.5 Does cidb registration guarantee performance?

Most of the respondents (96.6%) indicated that there is no guarantee that all cidb registered contractors will perform consistently well as illustrated in Table 4.4.3 below.

Any contractor that has a good reputation is bound to fail some time or another due to unforeseen labour shortages, subcontractors starting late, and delays in material deliveries. The risk of total failure is reduced to a certain extent.

Table 4.4.3: The extent to which cidb registration guarantees performance (n = 117)

Groups	No	Yes	n
Clients	9	1	10
Consultants	36	1	37
Key NDPW staff	13	0	13
Contractors	20	0	20
PMs	35	2	37
All groups	113	4	117
Percentage	96.6	3.4	100

More responses to whether contractors are suitably graded include:

- “Contractors who are not even registered with the Electrical Contractors Board have obtained cidb ratings. As with 25.4 above the cidb does not have the capacity to monitor the grading system and the performance of all the contractors on an on-going or knowledgeable basis”
- “If registration guaranteed performance there would be no litigation on construction matters which is most definitely not the case”
- “The few cidb contractors I have dealt with have been reputable, have done work of reasonable quality yet have attempted short-cuts which were fortunately spotted by our monitoring staff. Once the short-cuts were drawn to the supervisor's attention, the problems were resolved. This is mainly due to the fact that the contractor is financially sound enough to do reworks, i.e. remedial work on his own work”
- “Accurate grading is not coupled to contractor’s actual ability to perform”, and
- “Factors such as the complexity, contract duration and staff changes / turnover are not taken into account.”

Q25.6 What strategies and best practices should be adopted to improve the development of emerging contractors?

Responses to this question include:

- “A proper incubator programme starting from simpler projects moving on to more complex projects with a mixture of theoretical and hands on training - the co-operative education model used in Germany could be a suitable application for this”
- “Set aside contracts where small emerging contractors can learn the consequences of mistakes on small projects and where they are still paid even if they have to redo work. The aim of these contracts would be primarily to train and secondly would be to deliver”
- “Timeous payment. Slow or late payment kills small contractors as the minute they default on payment they can only procure materials for cash”
- “Do not allow emerging contractors to take on projects for which are not adequately equipped to successfully complete”
- “Emerging contractors are often ‘bailed’ out of difficult circumstances of their own doing and expects this to be the norm. This should not be allowed to become the norm.”
- “Emerging contractors to work for a predetermined period as the understudy of a proven successful contractor on site for a predetermined number of projects”
- “Select contractors with qualifications in construction who are serious and committed to being developed. In other words a contractor with a proven track record of successfully completed smaller projects should be selected for development programmes”
- “Compulsory use of mentors” and “Appointing mentors to basically take charge of their decisions. This has also not been that successful as some contractors do not heed to advice given by the mentors”
- “Contractors that are awarded tenders and subcontract the complete project should be removed from the system. No skills transfer, upliftment or empowerment is achieved.”
- “Incubator programmes that are linked to larger projects”
- “They need basic lessons in finance and life skills. All too often they successfully complete their first few projects, with assistance from the client and consultant, but then go out and purchase an expensive vehicle and create debt instead of cash reserves or tools & equipment essential to obtaining larger contracts”
- “Do not allow emerging contractors to take on projects for which are not adequately equipped to successfully complete”

- “Avail finance for the smaller contractors and subcontractors. Could also consider advance or direct payment for expensive materials”, and
- “EPWP is not a solution or the only solution as it does not develop any skills. Skills must be developed to achieve lasting empowerment. Financial empowerment ends the minute money runs out, skills and educational empowerment remains with the beneficiary forever.”

4.5 TESTING OF THE HYPOTHESES

According to Collis and Hussey (2003:10) “A hypothesis is an idea or proposition, which can be tested for association or causality by deducing logical consequences, which can be tested against empirical evidence.”

This section presents the testing of the hypotheses resulting from further analysis of the descriptive statistics presented in the analysis and interpretation of results of Likert-type questions (Section 4.2), relating dependent variables to independent variables (Section 4.3), and the analysis of responses to the qualitative data (Section 4.4).

4.5.1 HYPOTHESIS 1: CLIENTS PLAY A MAJOR ROLE IN ACHIEVING PROJECT SUCCESS OR FAILURE

Question 1: Table 4.2.1 illustrates that client representatives attending briefing meetings are not well informed of their own real accommodation needs, which is validated by the fact that client representatives have insufficient knowledge of their own accommodation needs and are partially informed at the time of the project brief as seven of the ten briefing elements (70%) achieved $MSs > 2.27 \leq 2.71$ (mean MS 2.64). The client representative’s knowledge is found lacking in terms of all the major elements that will lead to cost and time overruns because of continuous changes to the scope, performance requirements, standards, and technology requirements.

Question 9: Table 4.2.11 illustrates that the client’s contribution toward achieving project success is deemed to be inadequate due to the $MSs \geq 2.07 \leq 2.80$. The level of client contribution is found lacking relative to all fifteen briefing elements (100%), which achieved a mean MS of 2.40 relative to the level of importance to achieve project success, which achieved a mean MS of 4.27.

Question 10: Table 4.2.12 illustrates that the client representatives very often rely on the NDPW's PMs' technical expertise and knowledge of the accommodation needs to facilitate project planning and implementation with the appointed consultants due to the MSs being $\geq 3.51 \leq 3.97$, and a mean MS of 3.77.

Interviews also revealed the fact that inappropriate client representation at project briefings and planning sessions contribute to project failure as the client representatives are not capable of expressing their real needs and expectations which leads to dissatisfaction. Projects are therefore set up for failure from the start when the project brief is deficient due to the limitations of the client representatives attending the project briefing and planning meetings.

The client's inadequate knowledge of the key elements of the project brief which constitutes their needs, negatively impacts on the quality of the project brief as project objectives cannot be clearly defined. This scenario lends itself to incomplete and improper briefing in terms of scope, standards, timeframes, as well as project objectives as it is not clearly defined at the time when briefing the consultants who must do the planning. It is imperative that the client representatives on projects are able to contribute constructively in establishing clear project objectives and realistic expectations in order to achieve project success.

The hypothesis is thus supported.

4.5.2 HYPOTHESIS 2: PROJECT OBJECTIVES ARE NOT CLEARLY DEFINED AT THE PROJECT INCEPTION STAGE

Question 2: Table 4.2.2 illustrates that various elements (objectives) of the project brief often change from the project brief to project completion, which negatively impacts on the perceived level of project success and client satisfaction. The frequency of change is determined in terms of responses to a scale of 1 (very seldom) to 5 (always), which achieved MSs $\geq 1.96 \leq 3.45$ (mean MS 2.90). Six out of the ten variables (60%) achieved MSs ≥ 3.00 which implies that the project objectives and briefing elements change more frequently from project inception to project completion.

Question 4: Table 4.2.4 illustrates the impact on project success and level of client satisfaction caused by factors that drive changes to the construction brief (MSs $\geq 3.05 \leq 4.57$). The factors are deemed to have a moderate to severe impact on achieving project success and client satisfaction given the fact that all thirty factors (100%) achieved MSs > 3.00 . It is notable from

Table 4.2.4 that eight of the ten factors (80%) that occur the most frequently achieved MSs ≥ 3.00 . The remaining twenty factors achieved MSs $\geq 1.91 \leq 2.99$, which means they seldom occur.

Failure to clearly define project objectives at the project briefing meeting is vital to mitigate changes to the project brief throughout the project life cycle to avoid cost, time, and quality creep thus resulting in project failure and client dissatisfaction. Questions 2 and 4 revealed that project objectives are generally not adequately defined relative to its importance at the time of the project briefing.

The hypothesis is therefore supported.

4.5.3 HYPOTHESIS 3: PROJECT BRIEFINGS ARE NOT ADEQUATE TO LIMIT CHANGES TO COST, SCOPE, TIME, AND QUALITY

Question 3: Table 4.2.3 illustrates the differentiation between the PMs' current level of performance to conduct proper briefings, and ensuring that all the crucial elements of the brief are dealt with adequately (level of importance) to establish project objectives in order to achieve project success. MSs range between $\geq 2.80 \leq 3.40$ (inadequate and adequate) with the mean MS 3.01. However, ten of the eighteen elements of the project brief (55.6%) that are considered to be important achieved MSs < 3.00 , which implies that these elements are not adequately addressed at project briefings.

Question 5: Table 4.2.5 illustrates the extent to which inadequate project briefs contribute to client dissatisfaction in terms of responses to a scale of 1 (none) to 5 (major). It is notable that all the MSs are > 4.00 with a standard deviation of 0.49, which implies that in general an inadequate project brief contributes substantially to client dissatisfaction. Table 4.2.6 illustrates the present situation where 41.2% of the respondents were of the opinion that an inadequate project brief has a substantial impact on client satisfaction and achieving project success while 58.8% thought it to have a severe impact on client satisfaction upon completion of the projects.

Question 6: Table 4.2.7 illustrates that the extent to which the project briefings should be improved achieved a mean MS of 3.14 (moderate improvement required). However, it is notable from Table 4.2.8 that 44.1% of the respondents indicated that moderate improvement is required to the project briefings of the NDPW, 19.1% substantial improvement, while 11.9% indicated

that the NDPW requires major improvement on their project briefings in order to improve on the success rate of the NDPWs projects.

Questions 3, 5, and 6 revealed that project briefings are generally inadequate which must be improved in order improve the perceived level of project success and client satisfaction.

The hypothesis is therefore supported.

4.5.4 HYPOTHESIS 4: PMs' CAPABILITIES DO NOT MATCH THE ACTUAL POST REQUIREMENTS.

Question 13: Table 4.2.16 illustrates the frequency of performing key activities as PMs relative to the actual level of performance that achieved MSs $\geq 2.82 \leq 3.87$, and a mean MS 3.38. The activities can be deemed to be seldom performed, given that twelve out of fifteen activities (80%) achieved MSs ≥ 3.00 and ≤ 3.87 . The remaining three activities achieved MSs $\geq 2.82 \leq 2.99$, which implies that they are very seldom performed.

Table 4.2.16 illustrates the extent to which the NDPW PMs are able to perform the key project management activities when they actually do perform the activities. Seven of the fifteen (46.7%) activities achieved MSs > 3.00 which implies that it is performed adequately where the PMs have average capabilities. The remaining eight activities (53.3%) are performed inadequately where the PMs have basic capabilities (MSs $> 2.00 \leq 3.00$). The achieved mean MS of 3.00 implies that the NDPW PMs have average capabilities to perform key project management activities adequately.

Question 14: Table 4.2.17 illustrates the extent to which PMs portray key PM qualities relative to its importance. The traits can be deemed to be portrayed adequately with average capabilities given that all ten of the PM traits (100%) achieved MSs ≥ 3.00 and ≤ 3.87 and a mean MS of 3.21.

Figure 4.2.1 reflects the qualities that PMs portray in relation to their current level of performance and capabilities, relative to its importance. The 'gap' between their level of performance and level of importance is evident, which implies that the majority of the NDPW PMs do not portray the qualities to the level that a PM should portray relative to their importance when considering the tenure of the NDPW as an implementing agent.

Question 15: Table 4.2.19 illustrates that the degree to which PMs take the time to foster skills to be more successful in managing projects relative to their level of importance. Project management skills are deemed to be fostered inadequately given that six of the seven (85.7%) of the project management skills achieved MSs ≥ 2.70 and ≤ 2.95 . One key skill (14.3%) achieved a MS of 3.86, which is PMs having empathy when it is admitted that it is nice when a project leader acknowledges that the project team has a life outside of work.

The variance between the level of performance and level of importance is evident from Figure 4.2.2, which implies that the majority of the PMs of the NDPW do not take the time to develop the skills required to be more successful as PMs.

Question 16: Table 4.2.21 illustrates the extent to which PMs have developed key traits of good managers relative to their importance to manage projects successfully. The managerial skills are deemed to be average as six of the ten (60%) managerial skills achieved MSs ≥ 3.01 and ≤ 3.07 . The remaining four (40%) managerial skills are deemed to be inadequate given MSs ≥ 2.76 and ≤ 2.98 .

The disparity between the PMs' level of performance and level of importance is evident from Figure 4.2.3 which implies that the majority of the PMs of the NDPW have not mastered the required managerial skills to be more successful as PMs as their abilities should be regarded as more than adequate.

Question 17: Table 4.22 illustrates the level to which the key project management traits are mastered by the NDPW's PMs is deemed to be inadequate since six of seven traits (85.7%) achieved MSs < 3.00 varying between ≥ 2.70 and ≤ 2.98 . The remaining one trait (14.3%) is deemed to be adequate having achieved a MS ≥ 3.16 . It is thus confirmed that the extent to which PMs have mastered the required key traits is deemed to be inadequate given the mean MS = 2.92, while the average level of importance is considered to be important (mean MS = 4.35).

Figure 4.2.4 illustrates the degree to which PMs have developed key project management traits to be more successful in managing projects in relation to its level of importance. The 'gap' between their level of performance and the level of importance is apparent, which implies that the majority of the NDPW PMs have not developed the managerial skills required to be more successful as PMs.

Questions 13, 14, 15, 16, and 17 affirmed that the NDPW's PMs' capabilities and performance do not match the actual post requirements as it is deemed to be predominantly either inadequate or adequate with average capabilities, while the post requirements require that a PM's capabilities should be more than adequate / mastered.

The hypothesis is therefore supported.

4.5.5 HYPOTHESIS 5: THE NDPW HAS NOT ADOPTED PROJECT MANAGEMENT AS THE CORPORATE METHODOLOGY AND CANNOT BE CONSIDERED TO BE A PROJECT COMPETENT ORGANISATION.

Question 8: Table 4.2.10 illustrates that both the NDPW and clients are not successful in fulfilling their respective responsibilities as the frequency of occurrence of the most common causes of project failure are often present ($MSs \geq 3.00 \leq 4.09$), whereas the level of impact of the common causes is high ($MSs \geq 4.11 \leq 4.55$). The causes often occur (mean MS 3.37) on the NDPW's projects, as fourteen of the fifteen causes (93.3%) achieved $MSs > 3.00$ with a high impact (mean MS 4.28 average) on achieving project success thus resulting in project failure.

Question 18: Figure 4.4.1 in Section 4.4 illustrates that most of the respondents (97.4%) were of the opinion that the root cause for the vast amount of project failures within the NDPW is attributed to both the system and the people. There appears to be consensus that there should be stringent business processes to deter fraud, but it should be streamlined to reduce cost and time slippages and wasting valuable human resources. Comments received eluded to the fact that it is the people within the system that makes the system complicated and unmanageable. More specifically in terms of the employees' qualifications, experience, competencies and more importantly, general attitude and commitment to rendering as service.

Question 19: Table 4.2.23 illustrates the frequency of occurrence of the most common causes of project failure in terms of organisational readiness and support (mean MS 3.16) relative to its impact on achieving project success and client satisfaction (mean MS 4.46). The occurrence of the most common causes of project failure is deemed to be often, since twelve of the fifteen (80%) achieved $MSs > 3.00$ varying between ≥ 3.05 and ≤ 3.60 . The remaining three causes (20%) are deemed to be seldom present due to the MSs being $\geq 2.51 \leq 2.97$.

Question 20: Table 4.2.24 illustrates that the current maturity level of the NDPW as a project organisation is at best a level 2, although elements of levels 3 and 4 may be present, but not fully adopted as yet.

Question 26: Table 4.2.29 illustrates the extent to which the NDPW has adopted project management best practices as the corporate methodology relative to its importance. The level of performance of four of the fifteen (26.7%) identified functions of the PMO are deemed to be completely inadequate which achieved MSs $\geq 1.14 \leq 1.82$. Ten of the fifteen (66.7%) of the identified functions of the PMO are deemed to be inadequate where there is a system in place, but totally inefficient where MSs $\geq 2.00 \leq 2.76$. One out of the fifteen functions achieved a MS of 3.76. The current PMO is thus deemed to be inadequate which achieved a mean MS of 2.21 - inadequate system in place, but totally inefficient.

Question 27: Table 4.2.30 and Figure 4.2.6 illustrate the extent to which the NDPW has the ability to address issues relating to cultural differences relative to its importance. The level of performance of two of the five (40%) of the key elements for dealing with cultural issues are deemed to be completely inadequate (not able at all), which achieved MSs $\geq 1.82 \leq 1.88$. The remaining three elements (60%) are deemed to be inadequate with basic capabilities where there is a system in place, but totally inefficient which achieved MSs ≥ 2.20 and ≤ 2.14 . The current ability of the NDPW to deal with cultural issues is thus deemed to be inadequate which achieved a mean MS of 2.02.

It is evident from questions 8, 18, 19, 20, 26, and 27 that the NDPW has not fully adopted project management as its corporate methodology and can therefore not be considered to be a project competent organisation.

The hypothesis is thus supported

4.5.6 HYPOTHESIS 6: PMs ARE BEING MISMATCHED TO PROJECTS WITH NEGATIVE IMPACTS ON PROJECT SUCCESS AND CLIENT SATISFACTION.

Question 7: Table 4.2.9 illustrates the frequency of occurrence of the most common causes of project failure on the NDPW's projects (MSs $\geq 2.29 \leq 3.11$) and a mean MS 2.79, which can be attributed to the inexperience and inabilities of the designated PMs.

Question 11: Table 4.2.13 illustrates that the PM's capabilities often match what is required on the specific projects (mean MS 3.17 and SD 0.82). It is however notable that the PMs' highest MS is 3.73, while the key NDPW staff achieved the lowest mean MS of 2.54, followed by the contractors (2.90), and the consultants (2.97). Given the fact that the key NDPW staff, although not directly involved with the actual implementation of projects, are directly involved with the budgeting, programming, cash flows, and administers extending financial tender dates, extension of time claims and variation orders which gives them total insight as to what is actually happening on the projects. Interviews revealed that PMs are mismatched more often than shown in the survey as affirmed by the fact that both the contractors and the consultants also achieved mean MSs < 3.00 being 2.90 and 2.97 respectively. The PMs achieved the highest mean MS of 3.73 which stands to reason that people generally will not underrate their own performance, but rather inflate same.

Question 12: Table 4.2.14 illustrates the frequency of mismatching PMs that achieved MSs $\geq 2.65 \leq 3.35$. PMs are often mismatched (mean MS = 2.97) even though it is deemed important (mean MS = 4.41) to match PMs with projects' requirements to achieve project success.

The disparity of the findings of:

- Question 7 – the most common causes of project failure are often present on the NDPW's projects, which is attributed to the inexperience of the designated PMs;
- Question 11 - PM's capabilities often matches what is required, and
- Question 12 – the negative implications of mismatching PMs are often present on the NDPW's projects,

is attributed to the fact that the majority of the respondents only realised what the actual impact is of mismatching a PM once listed in detail in question 12. The key NDPW staff, consultants, contractors and clients rated consistently in all the questions, whereas the PMs rated inconsistently which contradicts the findings of question 11 as the frequency of occurrence of implications of mismatching PMs would not be as prevalent if the PMs are matched more often with the project requirements. The discrepancy is affirmed by the ANOVA test of question 7 ($p = 0.004$) and 11 ($p = 0.000$) that indicates that there are significant differences between the respondent groups.

The assessment of the key NDPW staff appears to be more realistic as they are directly involved in managing the project planning and the construction programme that gives them in depth knowledge of the manner in which all the PMs manage their individual portfolio of projects.

The fact remains that PMs are mismatched more often than indicated in question 11 as corroborated by questions 7 and 12, which does have a negative impact on achieving project success and client satisfaction.

The hypothesis is thus supported

4.5.7 HYPOTHESIS 7: CIDB REGISTRATION OF CONTRACTORS WILL NOT ENSURE IMPROVED PERFORMANCE AND INCREASE PROJECT SUCCESS RATES.

Question 25: Table 4.4.3 illustrates that the most of the respondents (96.6%) indicated that appointing cidb registered contractors will not necessarily ensure improved performance and increase project success rates. The respondents argued that this is mainly due to the current method of grading contractors whereby contractors are only screened by paper trail and not by authenticated reports and proof of past and present performance and achievements which result in contractors obtaining a grading higher than their actual capabilities.

The hypothesis is therefore supported

4.5.8 HYPOTHESIS 8: PROJECTS AND THE NDPW AS AN ORGANISATION ARE NOT ASSESSED, MONITORED, REVIEWED AND EVALUATED EFFECTIVELY TO INDUCE ORGANISATIONAL LEARNING.

Question 21: Table 4.2.25 illustrates the frequency of measuring the performance of organisations in terms of key performance areas relative to its necessity to facilitate organisational learning and growth. All eight (100%) key performance area / activities of measuring performance are deemed to be seldom measured effectively which achieved a mean MSs < 2.62 with MSs varying between ≥ 2.32 and ≤ 2.94 .

Question 22: Table 4.2.26 illustrates the level of evaluating projects relative to the necessity (importance). All eight (100%) of the identified purposes for evaluating projects are seldom evaluated effectively which achieved a mean MSs < 2.54 with MSs varying between ≥ 2.27 and ≤ 2.78 .

Question 28: Table 4.2.31 illustrates the efficiency in which the NDPW assesses key activities throughout the project implementation lifecycle relative to its importance. The level of efficiency on four of the twenty elements (20%) is deemed to be non-existent and completely inadequate which achieved MSs $\geq 1.72 \leq 1.88$. The remaining sixteen elements (80%) are deemed to be inadequate with basic capabilities which achieved MSs $\geq 2.00 \leq 2.38$. The current ability of the NDPW to assess key activities throughout the project implementation life cycle is deemed to be inadequate.

Questions 21, 22, and 28 have confirmed that projects and the NDPW is not being assessed monitored, reviewed, and evaluated effectively to induce organisational learning and growth.

The hypothesis is thus supported

4.5.9 HYPOTHESIS 9: ESTABLISHING PSOs WITHIN THE REGIONAL OFFICES WILL IMPROVE PROJECT SUCCESS RATES THUS ALSO SERVICE DELIVERY

Question 23: Table 4.2.27 illustrates that the current PMO maturity level of the NDPW is at best a level 2 although elements of level 3 such as the standardised documentation is available, there are still a number of shortcomings e.g. out-dated forms, supporting documents are not updated and available timeously, and changes are made to processes without being tested thereby creating more delays and problems. The minority of the respondents (9.3%) deemed the NDPW's PMO maturity level to be on Level 1, Level 2 (51.6%), Level 3 (37.1%), and Level 4 (2.1%).

Question 24: Table 4.2.28 illustrates the current level of performance of the NDPW PMO relative to the necessity and importance to establish PSOs in the regional offices. The level of performance on all eight (100%) of the identified functions of the PMO are both seldom performed and ineffective given that the achieved mean MSs < 3.00 with varying MSs between ≥ 2.40 and ≤ 2.69 .

It is notable from Figure 4.2.5 that 6.7% of the respondents views the NDPW's PMO to be non-existent, 38.1% to be ineffective, 49.6% to be reactive in nature, 4.3% effective and 1.3% to be very effective and efficient. It is notable that 95.2% of the respondents agreed that there should be a PSO in each regional office to develop the NDPW into a project competent organisation and improve service delivery, both internally and externally (41.5% agreed and 53.7% strongly agreed).

Questions 23 and 24 affirmed the real need for PSOs within the regional offices that would ultimately aid the NDPW to become a project competent organisation.

The hypothesis is therefore supported.

4.6 CONCLUSIONS

Nine hypotheses were derived from the problem statement and sub-problems in Chapter 1. The collection of the primary data and secondary information provided concrete evidence and support for the testing of the hypotheses that was dealt with in this chapter. The empirical evidence supported all nine hypotheses. The data analysis techniques used satisfied the assumptions presented in the various hypotheses presented. The evaluation of the entire hypothesis and the testing of the data obtained from the empirical research findings were accomplished. The validity and support of the principle questionnaire survey related to aspects of project implementation were tested for support of related specific hypothesis and presented. The results of the hypotheses laid a firm foundation for a need for formulating a project implementation strategy within the NDPW.

The following chapter, Chapter 5, presents a concept model that addresses the need for project support offices within the regional offices that would facilitate improved project implementation, as well as a project evaluation framework for building the NDPW into a project competent organisation.

CHAPTER 5:

THE PSO MODEL AND FRAMEWORK FOR PROJECT EVALUATION

5.1 INTRODUCTION

According to the Institute for Alternative Futures (2006: 2), advanced resource productivity requires systems integration, not reductionism. It demands optimisation, not rules of thumb. It requires multidisciplinary teams doing extensive work at the front end of projects to find strategies that optimise 'whole systems' instead of parts. Traditional design approaches often result in optimising components for single benefits rather than whole systems for multiple benefits. A whole-system multiple-benefit approach to project implementation within the NDPW is the only way to move beyond incremental improvements in service delivery and becoming a project competent organisation.

5.2 THE AIM OF THE PSO MODEL

The approach to project implementation within the NDPW should consider all fundamentals of achieving project success where one element is not given preference at the expense of other elements that will result in project failure. The development and deployment of a new business strategy can often involve implementing substantial changes in an organisation, its people, and its technology. For this process to succeed, existing beliefs and models of reality might have to be changed. The organisation will have to create operational alignment so that individuals and departments will be working synergistically in supporting the new strategy. This process is replete with potential barriers to success such as passive resistance, inter-group turf wars, fear of failure, and difficulties in identifying and establishing incentives and competencies across the organisation. To overcome such difficulties, decision makers should develop a shared understanding of the processes. Hence, the emerging relevance of the PMO / PSO that will streamline processes, coordinate project activities and allow for more efficiency in day-to-day implementation and management of projects and project programmes.

5.3 THE BASIS FOR THE PSO MODEL

The basis for the model is the need to improve project implementation within the NDPW as well as other project implementing agencies of the government such as local government, provincial government, and other subsidiaries that will enable these organisations to achieve project maturity and become project competent organisations where project success is the norm.

Hamilton (2006: 159) states that the concept of a PMO / PSO providing project management expertise and support to those engaged in project work is an option that is becoming increasingly popular. Bringing project management into most organisations traditionally is through the launch of broad-based training courses. These one-dimensional approaches frequently fail or have proved to be highly inadequate because what is needed is a combination of processes, skills transfer, enabling tools, as well as organisational structural adjustment and agents of change. A particularly effective way of incorporating reform to implementing and managing projects is to create a physical entity; referred to as a PMO or PSO. Hamilton (2006: 160) argues that by establishing a support facility and the services that such an entity performs can be determined by factors such as the size of the organisation, the type and volume of projects handled by the organisation, and the level of PM understanding and application.

Hamilton (2006: 160) advocates that an organisation working on creating balance between its normal non-project work and its project work should typically concentrate on achieving project management maturity facilitated by the PMO / PSOs that are dedicated to serving not only project management needs, but adding value to the whole supply chain of project implementation as well as the organisation itself.

The level of project management maturity achieved by the performing organisation generally determines the range of services that the PMO / PSOs need to provide to raise maturity and create the necessary change. The range can be extensive and span from strategic change initiatives for the organisation to tactical support for individual projects. In the same way, that one function of a PMO / PSO is the monitoring of projects and project teams on an on-going basis, so it should also be an expected, and accepted, protocol that top management regularly monitors PMO / PSO activities.

5.3.1 PROJECT MANAGEMENT CULTURE FRAMEWORK

One of the main causes of project failure is attributed to a non-supportive project management culture in organisations. An operational 'project management culture' framework was formulated through triangulation of the literature review, the survey questionnaire, interviews and workshops, based on Du Plessis and Hool's (2006: 36-43) definition of organisational culture, comprising of four dimensions that include project process; people in projects; project systems and structure, and the project environment.

Table 5.1: A project management culture framework (Adapted from Du Plessis & Hoole, 2006: 42)

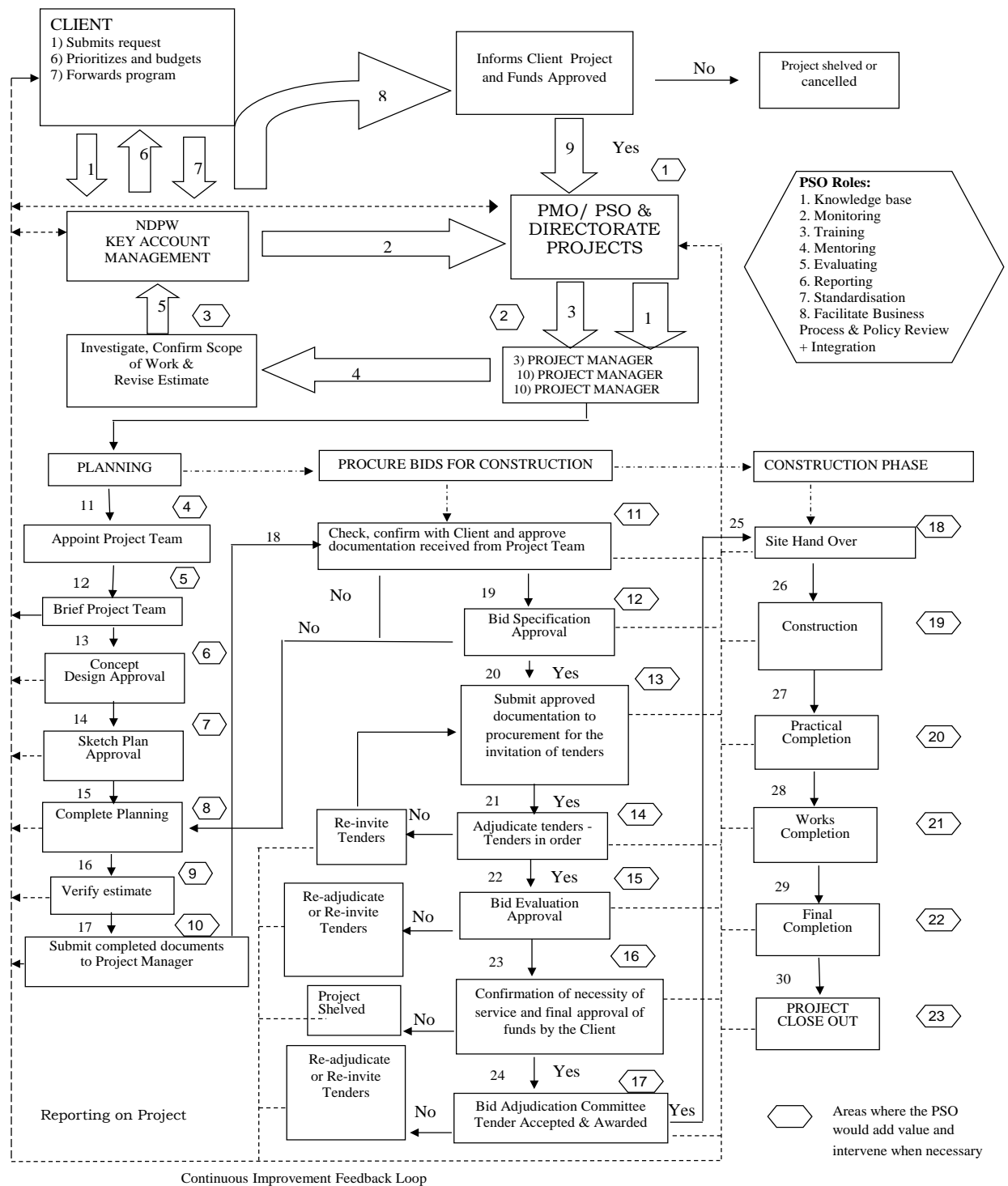
Project management culture framework	Descriptive elements per dimension in the framework
Project process or approach – The ‘how’	Process elements: <ul style="list-style-type: none"> • Integrated business processes, systemic in nature; • Well defined project life cycle; • Disciplined and controlled; • Client oriented delivery (both internal and external); • Results oriented, and • Continuous improvement and learning.
People in the project – the project team and stakeholders – The ‘who’ and for ‘whom’	The People elements: <ul style="list-style-type: none"> • Mind-set: <ul style="list-style-type: none"> - Results and risk oriented; - Disciplined and flexible paradigm; - Team-player; - Change readiness, and - Learning affinity. • Competent; • Committed and ethical; • Interdependence; • Trusting and trustworthy, and • Sound interpersonal relations: <ul style="list-style-type: none"> - Open communication; - Conflict management, and - Emotional intelligence.
Project management methodology structure and system- the ‘what’	Structure and Systems elements: <ul style="list-style-type: none"> • Clear project implementation plan; • Communication plan; • Work breakdown structure (WBS) on processes; • Clear roles and responsibilities; • Responsibility Attainment Matrix; • Team approach / Networking; • Risk management; • Flexible boundaries / Temporary structure; • Specifications, deadlines, milestones; • Measurement and control, and • Monitoring, evaluating, training, mentoring, and learning.
Project environment – the ‘where’ Internal - the organisation External - the project team and the client	Environmental elements: <ul style="list-style-type: none"> • Strategic emphasis; • Upper management support; • Project planning support; • Client / end-user input; • Project execution support, and • Organisational support.

Table 5.1 illustrates how project management culture is defined together with the descriptive elements belonging to each dimension that can be used as a conceptual framework where the project management culture is referred to ‘As the way we do things around here.’ Where ‘the way’ refers to the project process – the how; the ‘we’ refers to the people in the project, i.e. project team and stakeholders – the ‘who’ and for ‘whom’; ‘do things’ refers to the project management methodology – the ‘what’, and ‘around here’ refers to the project environment the ‘where’.

5.3.2 PSO INTERVENTION LEVELS WITHIN THE NDPW'S PROJECT IMPLEMENTATION CYCLE

Figure 5.1 illustrates the summarised process flow of implementing projects within the NDPW, which consist of ± 30 stages at which the PSO can add real value at ± 23 stages.

Figure 5.1: Identified areas of PSO intervention within the NDPW's project implementation cycle.

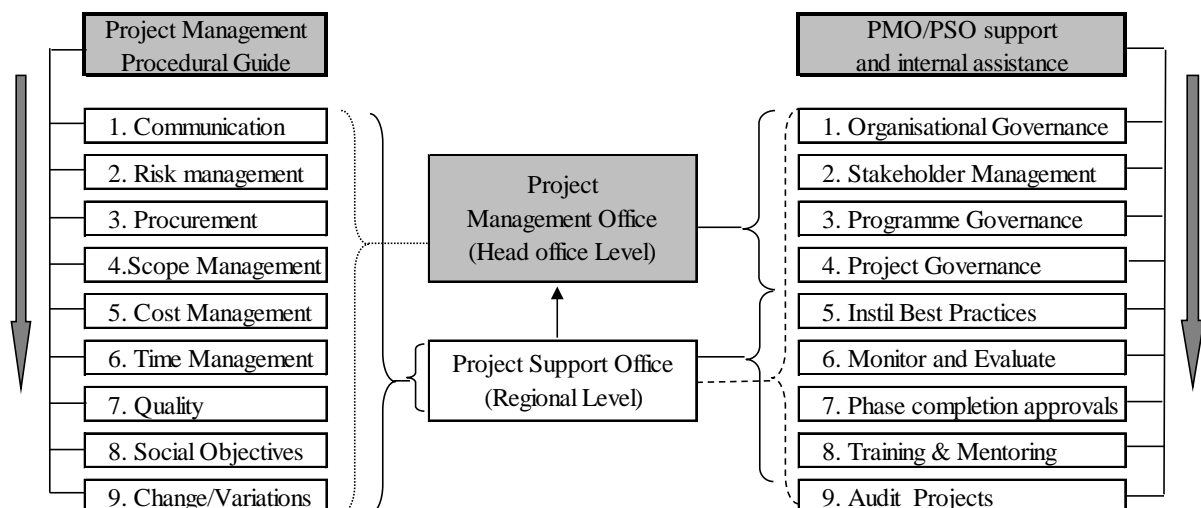


The PSO interventions will not only improve efficiency and standardisation, but also improve project success rates, facilitated by the PMO / PSO through the continuous improvement feedback loop and drafting clear project management procedural guidelines and providing internal support as illustrated in Figure 5.2.

5.3.3 KEY ROLES AND RESPONSIBILITIES OF THE PMO AND THE PSO

Rosenhead (2008:1) defines a PSO as a: “... business function charged with providing the organisation with the necessary supporting infrastructure and services to ensure that its portfolio of projects are being effectively and efficiently directed, managed and delivered.”

Figure 5.2: Key roles & responsibilities of the PMO and the PSO (Adapted from Hamilton, 2006: 141-146)



The PMO’s core responsibility at head office level, with the input from the PSOs in the regional offices, will include:

- Organisational governance that will:
 - Develop realistic and achievable organisational goals, objectives and strategies;
 - Develop programme strategies in conjunction with the clients;
 - Develop programme performance management plan in conjunction with the clients, and
 - Facilitate policy integration throughout the organisation.

Key benefits will include:

- Alignment with organisational objectives for both the NDPW and the clients in terms of accommodation needs;

- Alignment of projects and activities to achieve organisational goals and objectives;
 - Reduced project implementation lifecycles facilitated by policy integration and clear project scope definitions and objectives, and
 - Well-informed clients regarding project implementation and needs requirements aligned with their own strategic goals and objectives.
- Stakeholder management that will develop and maintain:
 - Develop a clear and unambiguous communication plans to improve communications within the NDPW and with the clients;
 - Develop training and change management plans that will also include mentoring and coaching;
 - Develop management skills in terms of business acumen and interpersonal skills;
 - Restructuring and improved career path development and remuneration, and
 - Stakeholder needs assessment analysis in relation to their strategic organisational direction.

Key benefits will include:

- Acceptance of change initiatives leads to increased successes in project implementation;
 - Acquiring the services of suitably qualified and experienced PMs;
 - Improved change management including financial and outcome management, and
 - Increased programme support from all components within the supply chain.
- Programme governance that will:
 - Coordinate technical issues amongst components within the organisation at head office level;
 - Develop and maintain a well-defined project implementation methodology and guidelines;
 - Develop and maintain standardised technical documentation;
 - Develop programme strategies programme performance management plans;
 - Enforce knowledge management;
 - Improve programme reporting at head office level;
 - Manage programmes, project implementation, and budgeting more proficiently;
 - Provide input for policy integration, and
 - Resolve technical and administrative issues.

Key benefits will include:

- Alignment with organisational objectives for both the NDPW and the clients in terms of accommodation needs;
 - Improved technical alignment facilitating consistent and compatible decisions across all projects;
 - Improved technical standards and consistent approaches to project implementation across all projects, and
 - Well informed clients pertaining to project implementation and needs assessments.
- Project governance that will improve:
 - Financial management;
 - Programme management and reporting;
 - Risk management;
 - Schedule management;
 - Scope and quality management, and
 - Standards and business processes.

Key benefits will include:

- Clearly defined programme requirements and documented needs of projects that can be clearly communicated to all stake holders that would enable them to manage cost, scope, time, quality, H&S, and environmental management more effectively and efficiently across all projects;
- Efficient operations through the use of standard tools, processes and practices;
- Improved decision-making facilitated by having suitable information available to make informed decisions, and
- On-track projects frequently delivered on time, within the budget and within the scope and quality parameters and objectives agreed to at the project inception stage.

The PSOs' core functions and responsibilities at regional level, in conjunction with the PMO, will include:

- Instil best and sound practices where the PSO will:
 - Coordinate, share and document best practices that would be circulated and implemented throughout the organisation via the PMO;

- Drive changes to business processes, directives, policy integration, and promoting suitable delegated authority of the respective role players to ensure more rapid implementation, and
- Facilitate various project workshops, providing advice on the project management guide's procedure interpretation and application, provide assistance in the planning and control of projects, and helping in any aspect of a project's management.

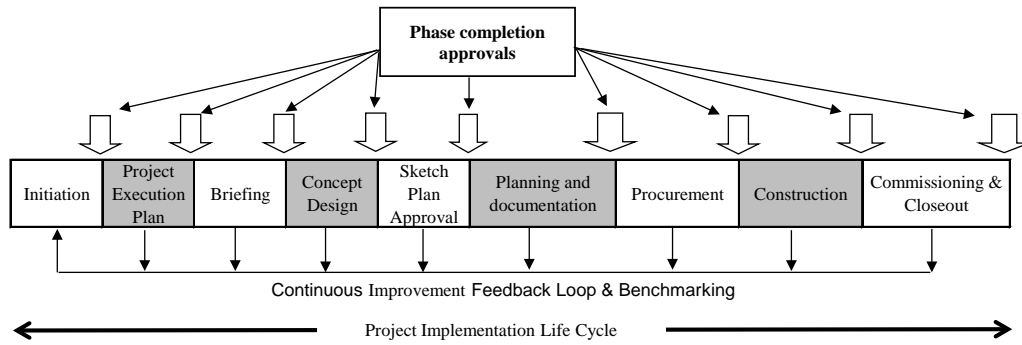
Key benefits will include:

- Continuous improvement throughout the organisation;
 - Increased knowledge sharing and building a larger knowledge base;
 - Fast tracking of change initiatives, and
 - Standardisation of methodologies throughout the department.
- Monitor and evaluate projects and processes:
 - Appropriate procedures are followed during each phase;
 - Conduct constructive intervention meetings;
 - Ensuring that projects are being managed proficiently, and
 - Evaluate projects in terms of original project execution base lines.

Key benefits will include:

- PMs will be enticed to improve their own capabilities and to broaden their knowledge base;
 - The PSO will be required to be more proactive by continually checking on progress of the different actions and having informal discussions to avoid time delays, reworks, abortive works and fruitless expenditure;
 - Identification of the real training and mentoring needs, and
 - Establishment of a baseline for performance measurement.
- Phase completion approvals:
 - The PSO will be responsible for reviewing each project phase upon completion of each phase ensuring that all processes, standards and delivery requirements have been met (Figure 5.3). The PSO will have the authority to stop a project proceeding to the next phase if set norms, requirements and procedures were not fully satisfied.

Figure 5.3: Phase completion approvals (Adapted from Hamilton, 2006: 142)



Key benefits will include:

- Any shortcomings in terms of managing the project, organisational procedures and client contributions can be addressed immediately;
 - The PSO will address the real cause of the problem and not only the symptoms;
 - Enforcement of self-development and building key project management competencies to successfully manage projects, and
 - Reduction of audit queries as all procedures followed would be in accordance with the prescribed business processes.
-
- Training and mentoring:
 - The PSO can assess the individual abilities of the PMs and project related staff to identify training needs;
 - The PSO will facilitate structured training for all the relevant departmental staff engaged on project-related work which is an essential part of becoming a project competent organisation;
 - The PSO will facilitate formal project management training affording PMs the opportunity to progress through various training levels to PM certification who would then be capable of handling most types and sizes of projects and having the ability to mentor and train other PMs;
 - The PSO will either do the mentoring or designate a competent senior PM to do the mentoring, and
 - The PSO will assist with restructuring the Projects component within the organisation according to skills, knowledge and experience in order not to have unevenly balanced project teams, e.g. a senior PM supervising a PM with vast experience, a PM of lesser tenure and a PM in training.

Key benefits will include:

- Balanced project teams / sub components;
 - Certified professionally registered PMs who have the post-related competencies;
 - Comprehensive understanding of the project management methodology and implementation throughout the organisation;
 - Continuous expansion of the knowledge base;
 - Immediate assistance available when required, and
 - Saving of financial resources on training.
- Audit projects:
 - The PSO will conduct periodic audits of projects at least once every phase of the projects' development life cycle in terms of procedures, standards and protocol to ensure that all recommendations contained in the audit report have been addressed.

Key benefits will include:

- Instilling of discipline to follow procedures and protocol, and it
- A reduction of queries as all procedures followed would be in accordance with the prescribed business processes.

The core functions of the PMO / PSOs' as summarised by Rosenhead (2008:2-3) is to:

- Establish a pleasant and innovative project management environment in the organisation;
- Develop and maintain project historical archives for future decision-making;
- Develop and maintain project management standards and sustainable project implementation methodologies;
- Communicate the results of decision analysis to senior management and PMs for future projects;
- Identify training needs through project monitoring and evaluation, and facilitate certification of PMs through training programmes and mentoring. Provide training, internal or outsourced, to build core project management competencies and a common set of experiences. Training done by the PSOs will reduce the overall training costs paid to outside vendors;
- Oversee the development of estimates of project time and cost based on an understanding of project lifecycles and project complexities;
- Review project decisions and processes, and implement corrective measures and improvements where necessary throughout the organisation;

- Track organisation-wide metrics on the state of project management, project delivery, and the value provided to the business and clients, and
- Understand pitfalls related to project management within the project implementation lifecycle.

The PMO / PSO is not intended to do the work on behalf of the PMs, but to provide guidance, mentoring and support to the PMs and other members of the supply chain so that they can do the work and learn from the experience, and reduce turnaround time in decision making.

5.3.4 MAIN DUTIES AND BENEFITS OF THE PMO / PSO TO THE ORGANISATION

PMs should be freed up by the PMO / PSOs to do what they do best: Work on projects and not fight the daily battles of organisational politics, processes, and policies.

According to Rosenhead (2008: 4), there is no one specific role for the PMO / PSOs as it is generally organisation specific, one will maybe advise, the other may control, or the other actually do some of the projects, all developed in line with the specific needs of the organisation.

Makar (2007: 1) advocates that the PMO / PSO often emerge as a construct to manage the project portfolio as an organisation's project management maturity increases. The PMO / PSO can be found at different levels of an organisation including organisation-wide, organisation-level or programme-level PMO / PSO. The organisation level PMO / PSO has a strategic focus and its scope encompasses across all the projects in the corporate portfolio.

Depending on the governance requirements, all projects may report to the organisation PMO / PSO, or only select programmes or projects may report directly to the organisation PMO / PSO. Independent of portfolio reviews, the organisation PMO / PSO is a top-down organisation that defines the project management standards, tools, and techniques other organisations should follow.

An organisation- or department-level PMO / PSO will focus on the specific projects executing within the organisation and implements the standards, tools and techniques prescribed by the organisation PMO / PSO. Depending on the project size, complexity and organisational impact, department-level projects are reviewed by the department-level PMO / PSO for improved communication and support.

A programme-level PMO / PSO will provide the administrative and project management support to projects within the programme. Its scope and influence is limited to the programme since its authority is an extension of the programme manager's authority. A programme level PMO / PSO is the 'arms and legs' of the programme management function that drives programme delivery.

The scope and authority, according to Makar (2007: 1-3), will vary depending on the hierarchy of an organisation, organisation-level or project PMO / PSO. Each PMO / PSO can provide several key functions to support the portfolio. These functions range from the classic project management processes found in the PMBOK to the administrative tasks sometimes bestowed upon business planners or staff generalist positions:

- Communications management: Every project and programme requires a communications plan. Although the target audience and frequency may vary at the programme and project levels, the PMO / PSOs will create the overall programme communication standards for projects to follow. The PMO / PSOs will also assist the programme manager in developing necessary communications to programme stakeholders;
- Financial management: Tracking actual expenditure, forecasting future cash flows and expenditure while navigating the organisation's procedures and reconciliation procedures can often be a full time role within the PMO / PSO. Reporting cost and expenditure variances and adjusting programme forecasts based on change control is a critical function for fiscal success;
- Governance: The governance function of the PMO / PSO plays an important role by providing decision support for PMs, decision makers, and stakeholders involved in the programme, organisation and organisation. Documenting governance decisions and tracking action items for future governance sessions provides the administrative support needed for effective decision-making;
- Performance management: The performance management function integrates project level status reporting and generates the programme level status for executive reviews. The PMO / PSOs investigate specific performance issues and communicate early warning signs of troubled projects. The PMO / PSOs also enforce consistent performance reporting guidelines so each project reports project performance consistently;
- Quality management: The PMO / PSOs provide quality management by providing expertise in quality control, quality assurance, coordinating quality inspections, and process coaching. This function is often perceived as an administrative overhead and intrusive to individual projects, although very critical for consistent delivery. The PMO / PSOs should inspect

project level deliverables and more importantly provide coaching to project teams requiring additional project management support;

- Risk, issue- and scope management: The processes of risk management, issue management and scope management apply to programmes as well as individual projects. The PMO / PSO supports individual projects by identifying and evaluating risk, issues and change requests to the construction programme. The PMO / PSOs manage the specific reviews, document key decisions, and organise projects within a programme due to synergies gained from working as an integrated set of activities. The key processes of risk, issue and scope management is then also integrated for mutual benefit;
- Resource management: Resource allocation and resource capacity needs to be managed across the programme for effective utilisation. Depending on how resources are allocated, different projects may have additional resource capacity and skills that can be shared across the programme. By establishing a resource management model and tracking utilisation, programmes can make better decisions for project prioritisation. The key to an effective resource management model is the quality and reliability of the underlying data. The PMO / PSOs manage the data collection and reporting process;
- Schedule management: The schedule management function assists the programme by identifying project level milestones and integrating them into an overall programme level plan. The programme level plan is a summarised view of critical programme milestones. If the programme is leveraging tools such as Microsoft Project Server, the PMO / PSOs may integrate the detailed project schedules into a detailed programme schedule. The PMO / PSOs also monitor schedule variances and recommends corrective action, and
- Supplier management: The PMO / PSOs support supplier management by monitoring the various suppliers such as consultants and contractors providing services to the programme and notifying the programme manager of supplier performance issues. Supplier performance scorecards integrated through the PMO / PSOs and individual suppliers work with the PMO / PSOs to understand performance-reporting standards.

The functions that are specific to project management delivery and additional administrative functions such as document management and facility management may be supported. The scope of functions provided depends on the form and needs within the programme or the organisation. Makar (2007: 3) states that once an organisation determines the form of PMO / PSO needed, the organisation can use these functions as a PMO / PSO checklist to develop the project office.

5.3.5 CONTINUOUS IMPROVEMENT MODEL

As the NDPW continues to struggle to achieve project and programme success, the PMO must be aided by PSOs within the regional offices that offer not only the day-to-day management needed to implement projects, but also the strategic guidance, technical know-how and people focus required to achieve lasting results and project success.

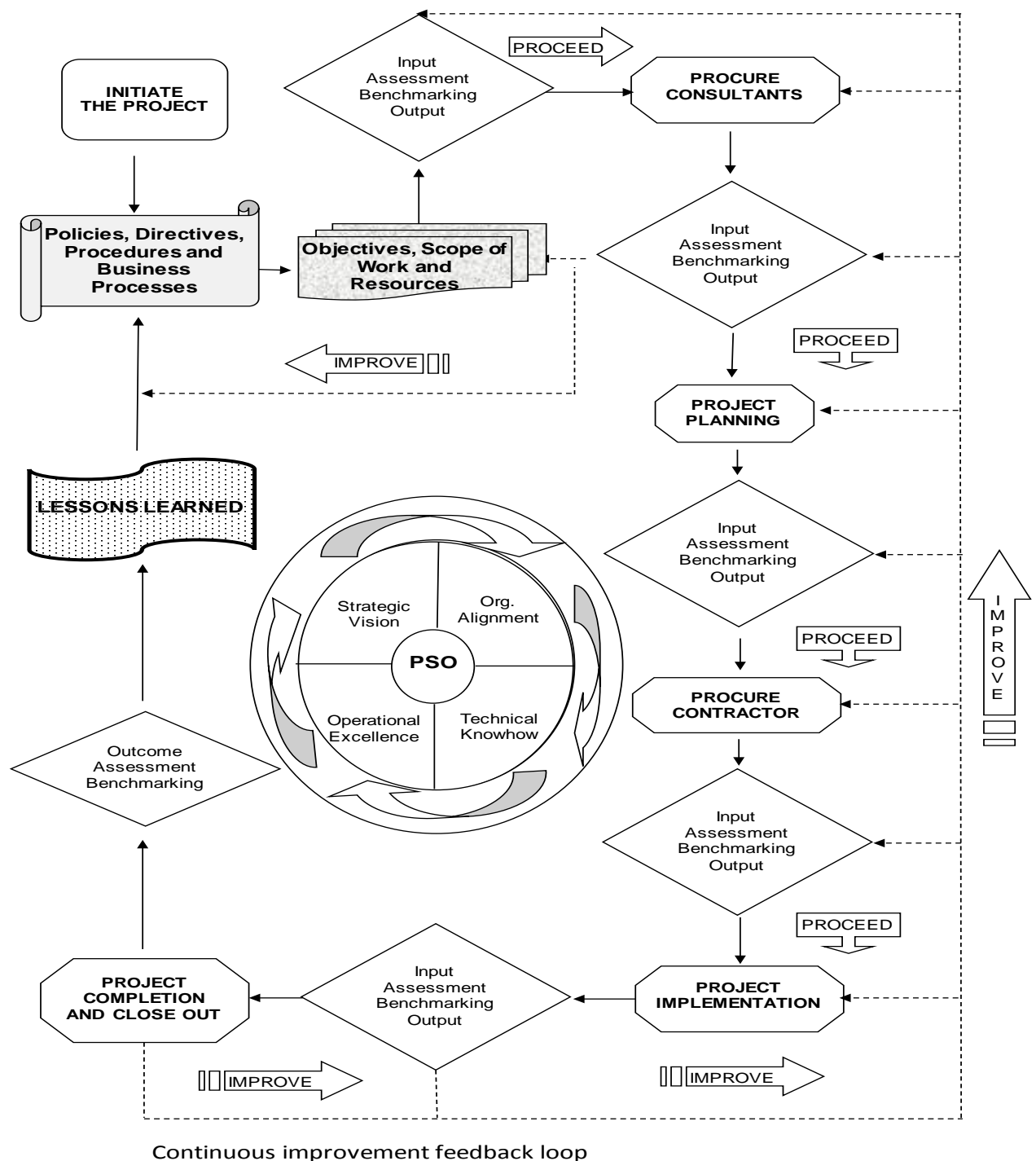
The PSO can offer a fresh approach, extending the traditional PMO role to better achieve programme objectives, as the PSO understands the organisation's objectives and aligns the programme's objectives accordingly; incorporates programme-specific or domain knowledge to better integrate its various components, and emphasises the importance of organisation dynamics and human factors in achieving programme objectives. In addition, the PSO can more effectively manage traditional PMO activities, including risk, schedule, and cost and scope management.

Hueber and Schroer (2008: 2) argue that there are several reasons for project failure, but the lack of leadership and poor management are most often to blame. Hueber and Schroer (2008: 3) also cite a Deloitte survey that reported ten ways projects are hampered by lack of attention paid to human factors wherein it is dually noted that seven of the top ten barriers to project implementation are human factors that include:

- Inadequate management involvement and commitment;
- IT related- and office equipment problems;
- No change management programme;
- No horizontal process view;
- Poor project management;
- Project teams lack skills;
- Scope expansion and uncertainty;
- Resistance to change, and
- Unrealistic expectations.

The current PMO of the NDPW needs to be transformed from a passive and stagnant entity to a proactive and dynamic, collaborative and engaging entity with the aid and support on PSOs within the regional offices as reflected in Figure 5.4 where the PSOs provide impetus to improving project implementation throughout the project life cycle of the NDPW.

Figure 5.4: A continuous improvement model



PMOs are often cited as the answer to these problems, and governments and private organisations spend millions to establish them each year across the world. Despite the perceived need for PMOs, their ambiguous role and often-incomplete implementation limit their effectiveness. Traditional PMOs, such as the NDPW's PMO, according to Hueber and Schroer (2008: 3), become paper tigers, ineffective at managing programmes to achieve results. The PSO is an opportunity to remedy the PMO's common pitfalls and achieve the results too many programmes rarely realise.

5.3.5.1 The PSO: A catalyst to improving PMO capabilities

By design, project offices focus on tracking, monitoring and reporting, as opposed to managing outcomes. Project offices are often also not empowered to influence programme direction nor are project offices involved in measuring and managing programme delivery or expected benefits.

Table 5.2: Distinctions between the PMO and the PSOs (Adapted from Hueber & Schroer, 2008: 3)

Primary traits of the traditional PMO	Expanded primary traits of the PSO
<ul style="list-style-type: none">• Outcome driven;• Strategic and agile;• Reactive;• Effectiveness oriented;• Leverages human capital, and• Collaborative and communicative.	<ul style="list-style-type: none">• Output and outcome driven;• Administrative;• Anticipatory and proactive;• Efficiency and effectiveness oriented;• Costs and schedule focused, and• Process focused.

Table 5.2 outlines the key distinctions between the PMO and PSO. In contrast, the PMO focuses on the strategic outcomes and results the organisation requires, including technical or financial performance thresholds. The PSO goes beyond these traditional measures to include measuring benefits against key performance indicators (KPIs) defined by the appropriate executive programme leaders and consistently aligning target results with the objectives of the organisation in conjunction with the PMO.

5.3.5.2 Four key components of the PSO

According to Hueber and Schroer (2008: 3-4), the PSO is similar to the PMO, but is responsible for execution, as will reinvent the PMO in the following ways:

- Programme strategy and mission alignment: Key to contribution

Critical to the effectiveness of any programme is being aware of its objectives and understanding how the programme fits within the organisation's overall strategy and objectives. The Programme Strategy and Mission Alignment component of the PSO focuses on clearly defining the programme objectives, confirming that it is aligned with the organisation's objectives, and managing all projects within the programme portfolio to achieve those objectives. Without this alignment, programmes frequently fail, either because

their objectives are not achievable or because achieving their objectives has no impact or a negative impact on the organisation. To avoid this, the PSO works with the programme stakeholders to:

- Outline the objectives of the organisation, identifying which objectives the programme aims to support;
- Identify and clearly articulate the vision and objectives of the programme;
- Define the specific projects to be implemented in support of the overall programme objectives, and
- Establish the programme-level plans that programme resources will follow in order to stay aligned with one another and ultimately meet the programme's objectives

- **Domain authority: Key to integration**

Because large, complex organisational programmes span organisations horizontally, communication and coordination are keys to achieving their desired objectives. The domain authority is a team of people focused on organisation-wide integration that recognises the interdependence among business transformation programmes and technical design dependencies, constraints and issues. It is not a discrete, stand-alone part of the programme. Rather, it is a cross-functional and cross-organisation entity that supports a programme's technical decisions, which confirms that all decisions consider the holistic impact on people, process, technology, and organisation. The domain authority then plays a key role in three dimensions: business goals and programme alignment from a design perspective; foundational services or technical experience, knowledge, and skills, and programme blueprints and standards.

The PSO is generally empowered to make decisions, as necessary, with clear integration into the programme's governance processes.

- **Organisational readiness: Key to adoption:**

The long-term effectiveness of any programme depends on stakeholder support and adoption. Without this buy-in, a programme may achieve short-term results under the drive of its sponsors and leaders, but the long-term prognosis is poor, as leaders move on to the next programme and the day-to-day stakeholders - those who must ingrain the programme into the organisation for long-term results - abandon the effort.

The PSO focuses on these stakeholders throughout the life of the programme. It begins with a stakeholder analysis, during which the stakeholders are identified and interviewed to understand their needs gain their input, while simultaneously establishing set their expectations. With this information, the PSO develops a stakeholder management strategy that documents stakeholder needs related to the programme and establishes a plan for addressing their needs. With this strategy, the PSO develops the change management plan detailing how the programme will transition stakeholders from the 'old way' to the 'new way'. Stakeholders that are informed will likely be more engaged and feel part of the programme, ultimately supporting and implementing its results. Sponsorship, while critical to gaining stakeholder attention, is not enough to secure their long-term endorsement.

- Enhancing the traditional role of the PMO:

The PSO component of the PMO fulfils an important leadership and oversight role. PSOs will play a variety of roles, including acting as advisors on risk management, reporting templates and making quality suggestions. The PSO often has the responsibility and authority to achieve consistency and efficiencies. It also acts as an overseer, establishing guidelines, templates and standard processes that make it easier for people to work together to achieve effective individual projects and consolidate reporting and tracking.

The PSO builds a strong PMO that serves as much as a mechanism to initiate and accomplish quick, efficient change, when needed and mutually agreed upon, as it does to manage the intricacies and dependencies of a set of related projects. In addition, it focuses on decisions required to achieve results and the programme's ability to meet its objectives, rather than simply tracking and reporting cost, schedule, and scope information.

5.3.5.3 Programme results: PSO outcomes

The PSO also focuses on the outcomes and not simply on the outputs of a programme. The first outcomes measured are the programme's ability to meet its initial objectives. These objectives should not be simply programme management-related, such as the programme's ability to deliver on time or on budget. It must reflect the overall need or purpose of the programme. For example, the results of a financial management transformation programme may be measured by improvements in the accuracy of the organisation's financial statements or the speed at which it processes accounts receivables.

Secondly, the PSO measures stakeholder adoption or acceptance of the programme. This measurement is a key indicator of the programme's long-term results. Short-term outcomes are often lost after the initial programme launch, when old habits or attitudes begin to percolate back into the system. For a programme to be truly effective, the stakeholders must not only support it but also embrace what the programme initiates. It cannot be effective in the long term if its support comes only from the key executives or leaders.

Thirdly, the PSO may focus on the programme's contribution, financial or otherwise, to the organisation's mission and results. Examples include linkage to government performance and results measures for government projects. Too often, organisations that procure traditional 'PMO support' fail to connect the performance of the actual programme with the performance of their PMO provider.

In using a PSO approach, organisations can build incentives into their programme support contracts that tie to programme outcomes and performance criteria. If the programme fails to meet its objectives, then both the organisation and its providers are impacted.

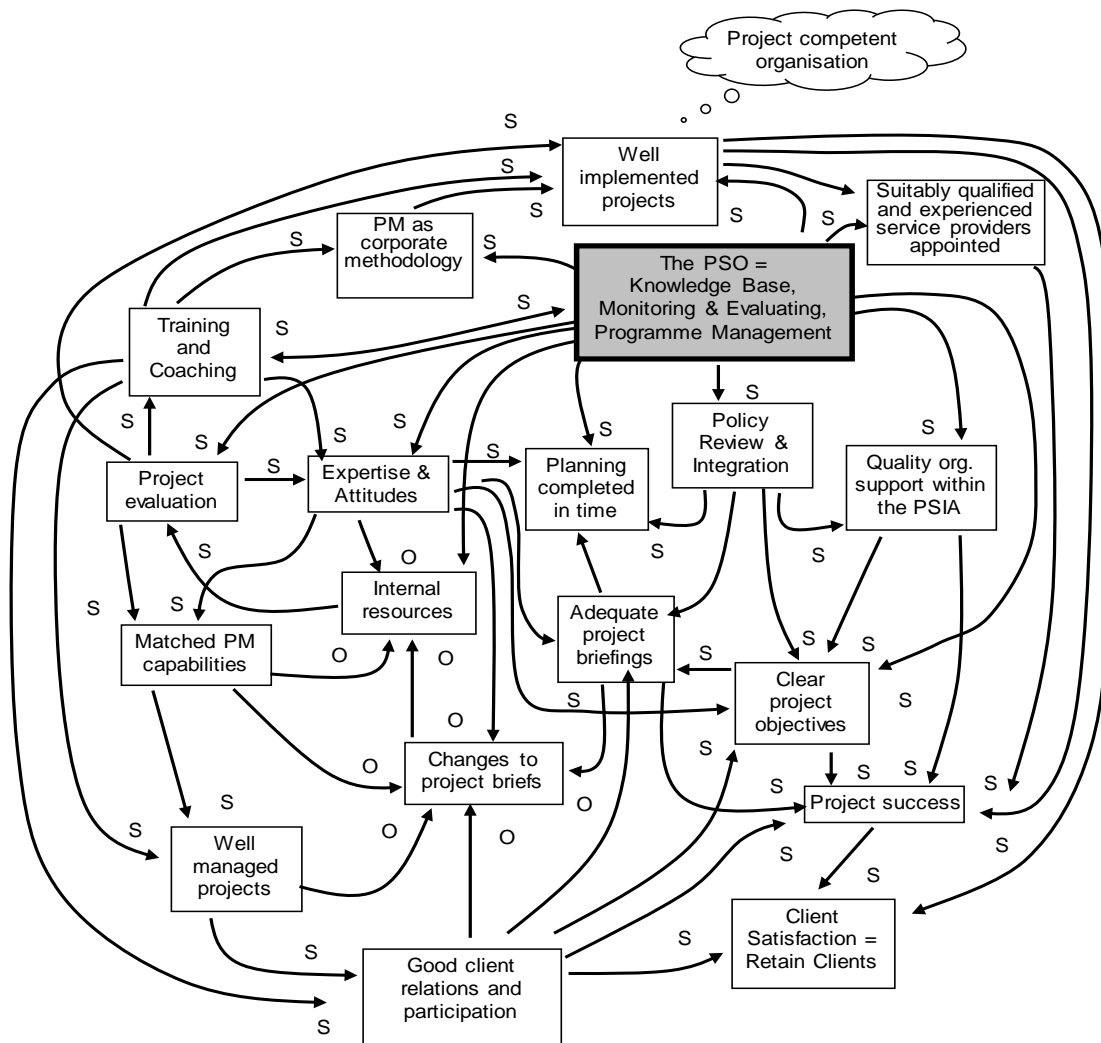
5.3.5.4 Enabling essentials for implementing the PSO:

Establishing an effective PSO is not as simple as it might sound. Having the appropriate experience within the PSO is essential. The most effective PSOs will have well experienced and knowledgeable team members who have executed the very programmes the PSO manages. In addition, the PSO must have access to resources with a variety of experience and knowledge to provide the necessary domain knowledge. For example, a technology implementation will require access to skills ranging from IT security to organisation architecture. A PSO should be able to call on those resources when and how it is needed throughout the programme.

The PSOs possess individual characteristics that differentiate them from traditional PMOs. These characteristics both make it easier to adopt a PSO and help further the overall programme goals. Figure 5.5 models the impact of establishing PSOs within the regional offices of the NDPW that is summarised as follows:

- Customisable: A key advantage of a PSO over a PMO is that it will address the specific nature and needs of the organisation. The PSO does not levy or impose standard processes or approaches, but will tailor same in conjunction with the PMO in accordance with the programme's requirements;

Figure 5.5: Project implementation as a system incorporating the PSO



- Scalable: A small team of individuals can establish foundational elements such as strategic alignment and organisation standards. Members may be added as the programme progresses and needs change. The PSO can also be scaled to match the size, geographic dispersion, impact footprint, requirements and complexity of the programme or even the actual regional office where it is located;
- Organisation-oriented: The capabilities of the PSO address cross-organisation, organisation-level complexities when strategic objectives, systems, processes or other major initiatives demand it;
- Effectiveness-driven: PMOs typically monitor cost, schedule, staffing, quality and overall performance of a set of specific activities - measures of effectiveness and not efficiency. The PSO focuses on both efficiency and effectiveness - the results and value a programme must deliver. Timely and cost-efficient delivery is a key management objective for execution, but outputs must translate into outcomes to achieve the expected results;

- Integrated and holistic: The PSO uses inputs from the programme components and from the organisation to view a programme from an overall integrated perspective, which is essential if a programme is to deliver tangible value, and
- Skills-based: Unlike a PMO, which is more process based, the PSO depends on, and delivers different skill combinations to effectively implement change and deliver programme results.

5.3.5.5 BENEFITS OF HAVING PSOs IN AN ORGANISATION

In Table 2.22, Rosenhead (2008: 2-3) summarises the main duties and benefits of establishing project support offices that will most definitely benefit and improve project implementation within the NDPW and similar project implementing agencies of the South African government.

Rathore (2010: 13) argues that given that the PSOs perform the responsibilities reasonably well, there are number of benefits that an organisation PMO brings to an organisation.

- More projects delivered on time and within budget;
- Better strategic alignment between business objectives and the projects initiated;
- Money spent on the right projects;
- Greater leadership support and buy-in on initiatives, result in a greater chance of project succeeding and getting support when needed;
- Better organisation wide utilisation of resources;
- Lesser or no overlap of effort between departments;
- Lesser or no duplication of work undertaken by different departments or from different people within the same department;
- Better communication across the organisation facilitates quicker and improved decision-making;
- Better collaboration and coordination across departments as operational issues will be driven by the PSO;
- Increased social objectives of skills transfer and professional registration of PMs;
- Better visibility of initiatives across the organisation;
- Reduce time, effort and costs to implement projects;
- More efficient delivery of projects;
- Better cost, time, and quality management, and
- Improved risk mitigation and structured risk resolution.

5.3.6 CRITICAL SUCCESS FACTORS FOR ESTABLISHING A PSO

The PSO functions should take account of the current conditions, tensions or needs, such as the economic tension from projects overrun, or resource and skills tensions from the lack of qualified PMs. The design of the PSO must allow for delivery on those objectives improved better budgeting and cost control; and training for PMs in the examples, and thus positioning itself for success.

Andersen *et al.*'s (2007: 97-104) benchmark study provides a number of critical success factors for establishing a PSO:

- Allow the PSO to progress at the right speed, starting at core needs and only moving to governance and portfolio management when the organisation maturity is higher and senior management sees value in the PSO assisting in those other functions;
- Cover the true needs of the organisation, as identified from the PSO stakeholders;
- Design the PSO based on organisational objectives, whether centralised, decentralised, or virtual;
- Do not develop the PSO into a bureaucratic control unit;
- Ensure top management and management support throughout the organisation;
- Focus on improved project management practices, and
- Resource the PSO with experienced senior PMs with broad skills.

Desouza *et al.* (2006: 414-423) provide similar critical success factors for establishing the PSO:

- Develop PSO charter and related documents;
- Clear reporting lines and develop metrics to evaluate PSOs. Compare scores to past performance, and external benchmarks;
- Focus on the drivers or background that PSO stakeholders see as important;
- Segmentation of PMs in two groups: business oriented PMs for strategic and large projects; and technical oriented PMs for technology specific projects, and
- The PSO must fit into the organisational culture. If there is a centralised structure, the PSO should be designed top-down. If it were decentralised, a bottom-up design with the voluntary collaboration of PMs would be best. Management support for the PSO is in all cases required.

According to Rathore (2010: 14), for the PMO / PSOs to succeed in its goals and deliver benefits to the organisation, there are certain critical success factors that should be considered:

- It is important that the PMO / PSOs is / are established as separate business functions or groups and should not be regarded part of projects, supply chain management, finance or any other specific department. The PMO / PSOs are supposed to support the organisation development across all functions and not just within projects;
- It is vital to have an organisational structure such that all the PSOs directly report to the PMO. The flow of communication and escalation path must be clearly defined to avoid any bottlenecks and unnecessary delays;
- Other departments within the organisation should not perceive the PMO / PSOs as an entity that wants to encroach on their territory. Instead, the entire organisation as well as the PMs must understand that the PMO / PSOs complement their work and are created to provide additional assistance. Proper organisation change management plays an important role in introducing the PMO / PSOs. If an organisation is newly introducing the PMO / PSOs to the organisation, the introduction of the PMO / PSOs should follow best practices of organisation change management;
- Positioning of the PMO / PSOs is a critical success factor to be effective. Some organisations create the PMO / PSOs for namesake, and thus are organisationally incorrectly positioned. It then does not command the authority from the rest of the organisation and other departments within the organisation. The PMO should report to the Chief Executive Officer while the PSOs will have a dual reporting system as the PSOs are decentralised within the regional offices, and will report to both the regional managers and the PMO in head office;
- The executives should not perceive that the PMO / PSOs are treading on their ground. There should be constant leadership support and buy-in for the PMO / PSOs to perform its role. After all, the leadership benefits from the PMO / PSOs in many ways including having information to take critical decisions. The PMO / PSOs must be seen as a function supporting the organisational leadership and not overlapping their responsibilities, and
- The PMO / PSOs must be staffed with people that have project management expertise and business acumen to be effective. Since the PMO / PSO staff is required to understand the business vision and provide coaching to the PMs as well as streamlining the project implementation processes.

5.3.7 THE PROPOSED PMO / PSO MODEL VERSUS PREVIOUS MODELS

According to the Cranfield School of Management (2009: 5), there are no 'One size fits all' PMO/PSO models as to a large extent it is dependent on the type of programme / business

organisation it has to manage / operate within. The responsibilities of the PMO / PSO is organisation specific although their services generally include creating the organisation's project management methodology and implementation, facilitate project management training and coaching, conducting project monitoring, evaluations, audits and organisation assessments, programme management and providing consolidated project reporting and metrics. Brady (2008: 01) advocates that the PMO / PSO can either be a managing-, consultative-, facilitative unit or any combination thereof. The model developed from this research is formulated from the reviewed literature as discussed under Section 2.9, and is not based on any previously developed model as the project implementation and business processes are unique to the NDPW.

5.4 PROJECT MANAGEMENT MATURITY MODEL

A project management maturity model (PMMM) describes an effective project management environment of which the key elements are used for benchmarking and evaluation. Taking the presence or absence of these elements into account, the assessment team determines if the capability is present for project management processes in that organisation. The established ranking scale provides plateaus for the purpose of continuous improvement of project delivery potential. The five-level scale is a common practice for maturity models. This commonality allows organisational ratings to be compared across industries or even across models.

The PMMM illustrated in Figure 5.6, indicates the basic steps that an organisation such as the NDPW can take to achieve excellence in project management. The key benefits of improving an organisation's project management maturity are increased efficiency, performance benefits, and client satisfaction.

To assess an organisation's project management maturity according to the Hewlett-Packard Company (2008: 1-5), the performance of the organisation in terms of the various project management knowledge areas must be evaluated in terms of the following levels of maturity:

- **Level-1: Common Language – Common understanding of project management**
The first level towards achieving project management excellence is a common language. The organisation should actively recognize the importance of project management and promote the sharing of the project management basics and associated terminology.

Organisations at this level experience infrequent project performance predictability. Project management is performed inconsistently across the organisation and it is highly probable

that the majority of the projects experience cost overruns, time delays, and defective deliverables. Isolated success stories are results of individual competent people combined with heroics, individual effort and unusual sacrifices. There is no serious commitment by the organisation to recognise the importance of project management. Project management is characterised as ad hoc and informal and very little training is provided, if any.

Level-1 organisations should take the following steps to graduate to a higher level of project management maturity:

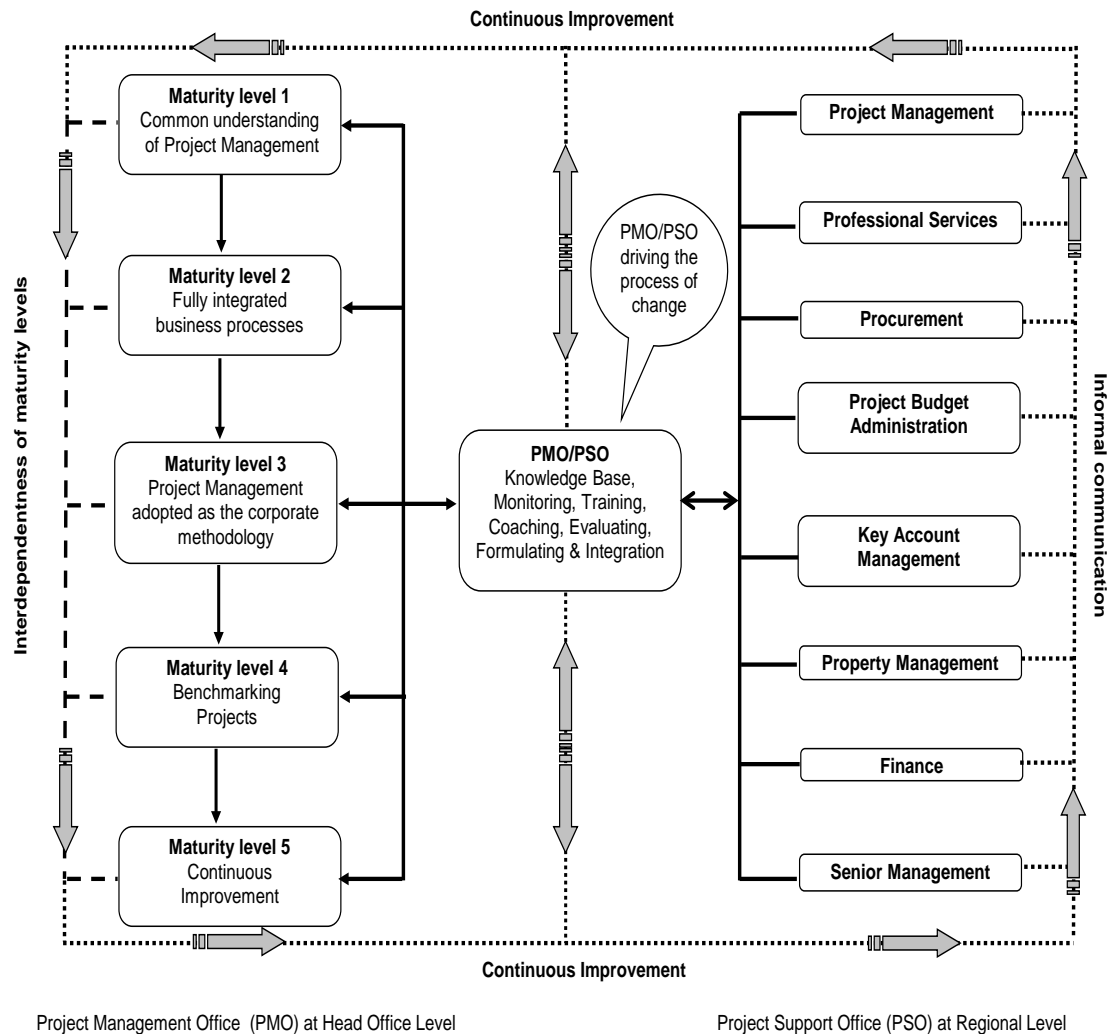
- Encourage the use of various project management tools, templates, checklists, and forms;
 - Provide training in project management and assist in employing suitably qualified and certified PMs, and
 - Support the use of project management terminology throughout the organisation.
-
- Level-2: Common Processes - General integrated business processes

Level-2 occurs when there are indications that project management has been adopted as a methodology and that project management roles and responsibilities are defined and institutionalised across the organisation. Well-developed templates, procedures, costs and schedules are tracked. Provision of proper training is on both technical and generic project management topics, as well as organisational procedures. The underlying disciplines are not well understood or consistently followed. Consequently, project success still is largely unpredictable and cost and schedule problems remain the norm.

Level-2 practices include those that bring about basic management control. Institutionalisation involves implementing a corporate culture that supports the methods, practices, and procedures of the project management practices in order to endure after those who originally defined them have left the organisation.

The common characteristics of organisations at Level-2 of the PMMM include the understanding of the benefits of project management, support to project management across various levels, and a defined process and methodology for managing projects.

Figure 5.6: The project management maturity model (Adapted from the Hewlett-Packard Company, 2008: 5).



Level-2 practices also include mastery of the application of the following PMBOK Guide knowledge areas of cost, integration, procurement management, scope, and time. Basic criteria that teams meet to achieve Level-2 include:

- Assigning resources and estimating the work effort based on work interruption factors, skill factors, and the part-time effect;
- Budgeting work packages to cost accounts relating to functional areas;
- Defining the scope of work in a charter or statement of work (SOW) or other scope definition document and decomposing the scope of work in a graphical work breakdown structure (WBS);
- Maintaining a performance baseline;

- Managing changes to the baseline and establishing a new baseline upon approval of increased scope, or performance indicates a new baseline is required;
- Monitoring performance against the baseline and implementing corrective actions to maintain the baseline, and
- Planning and scheduling the work embodied in the WBS into a project schedule with interdependencies linked to form a network diagram.

Level-2 organisations should take the following steps to graduate to a higher level of project management maturity:

- Develop a support for project management throughout the organisation;
 - Recognise the long term benefits of project management, and
 - Choose one of the project management methodologies and then ensure the defined processes are replicated on all projects.
- **Level-3: Singular Methodology – PM as a corporate methodology**
The level 3 organisation understands the value of combining corporate methodologies into one singular methodology for project management that are also integrated with other organisational structures and procedures. The common characteristics of organisations at Level 3 of the PMMM include integrated processes, whole-hearted support by the organisation to the singular project management methodology, and less paperwork for rigid policies and procedures. A PMO / PSO facilitates functional understanding of basic project management practices, well-defined performance management policies and assessments and a clear path for continuous improvement. It adopts proper up to date project management tools and techniques throughout the organisation. The impact of problems are methodically anticipated and efficiently prevented to minimise the impact. Information is collected, shared and used across all projects. The organisation demonstrates its commitment to project management by establishing a fully-fledged competent PMO / PSO with specific responsibilities for deployment of a standard project management methodology.

Advanced project management practices associated with Level-3 are integrated across the organisation and include those that enable the successful management of significant, high-risk, complex projects. Level-3 practices also include:

- Advanced communication techniques including measuring performance through earned value management (EVM), and managing the environment embodied in power, politics, and stakeholder management;

- Advanced risk management including quantitative risk assessment and risk response plans;
- Human resource management, involving building and maintaining high-performing project personnel and teams, and
- Quality management, including applying effective quality control and quality assurance practices.

Level-3 organisations should take the following steps to graduate to a higher level of project management maturity: Integrate all processes into a universally accepted project management methodology, and develop a sense of shared responsibility for the principles of project management.

- **Level-4: Benchmarking Projects and Business Processes**

Level-4 organisations understand the essence of continuous process improvement and an organisational-wide commitment to the project management culture. These organisations continuously compare their project management with those of the leaders in the market to set benchmarks.

The emphasis is to ensure that project management supports the business goals of the organisation. At this level, project management has been elevated to a strategic management practice. Cultural and organisational behaviours, structures and processes are in place to facilitate successful project implementation.

Quantitative project objectives are set to measure progress in implementing project management procedures and to determine the effectiveness of these procedures. Project success is the norm where performance in areas of cost, time, and quality conform to the baseline project execution plan. The existence of a PMO / PSO dedicated to improving processes and performance of both quantitative and qualitative benchmarking

Other elements of organisations practicing Level-4 project management include:

- Both the PMO and / or PSO support management portfolio decisions and project team execution;
- Executive oversight is evidenced by periodic project sponsor committees and control gate reviews that are conducted at major project milestones for reassessment of the

project cost, risk, schedule, scope, quality, and expected benefits to the organisation followed by go or no-go decisions to continue with the project;

- Portfolio and resource management is practiced, including project selection and prioritisation and on-going review and management of the portfolio;
- Projects are evaluated and reported on against corporate scorecard metrics, and
- Robust strategic plans exist that are converted to strategic goals and measured through a corporate scorecard.

Level-4 organisations should take the following steps to graduate to a higher level of project management maturity:

- Create a culture of benchmarking within the organisation;
- Fully understand the benefits of benchmarking, and
- Set up a project management benchmarking process as utilised in Six Sigma projects: define, measure, analyse, improve and control.

- **Level-5: Continuous improvement**

Level-5 organisations continuously analyse the information obtained from benchmarking and implementation to improve their project management process. Such organisations constantly strive towards project management excellence with the focus on continuous improvement.

This level requires the organisation to measure the effectiveness of its project management efforts / system and devise improvements in terms of processes, tools and techniques. Project management roles and responsibilities are well understood and implemented by all. Common causes of project management problems are prioritised and systematically eliminated.

There is participation in benchmarking as a way to continue to generate ideas for improvement and as a way to refine project performance metrics. Lessons learnt are implemented on future projects. Project success is the norm and generally meet, or even surpass, objectives in the areas of cost time, scope quality, organisational social objectives and client expectations.

As the organisation strives towards moving to a level-5 of the PMMM, it is not necessary to follow these levels in a sequential manner. Very often these levels will overlap and the

amount of overlap is governed by the organisation's risk tolerance limit and ability to mitigate risks and act proactively.

The goal is to put improvements in place that would enable and / or support timelier decision-making, a reduction in project management costs and improved project performance. Importantly, the key is to find a way to implement and adopt project management as an organisational methodology successfully throughout the organisation in order to deliver successful projects consistently.

Hamilton (2006: 161-164) suggests that organisational maturity in, project management terms, is reached when:

- The organisational structure and functionality reflects whatever is needed to take project decisions and successfully deliver projects;
- Top management provides appropriate support and are able to report on the status of projects within the organisation;
- PMs are provided with the responsibility and authority to manage projects;
- The tools and techniques needed to manage projects are provided, and
- The organisation invests in skills transfer to its PMs and support staff.

5.5 A CAPABILITY FRAMEWORK FOR DEVELOPING ORGANISATIONAL ABILITIES

The New South Wales Government (2010: 1-15) have identified four values which need to drive the way that the public sector works towards the State's goals, and these values have helped shape the nature and content of the capability framework which follows. The fundamental drivers for the success, according to the New South Wales Government (2010: 2), include having: stronger accountability; structures to drive action; effective partnerships, and decisions for the long term.

The capability framework aims to take the core values of business acumen of the South African government and specifically the NDPW, to the next level by defining how it translates into actions and behaviours in our day-to-day jobs:

- Confidentiality;
- Economy and efficiency;
- Fairness and equity;
- Integrity and public interest;

- Respect for people;
- Responsibility to the Government of the day, and
- Responsive service.

Table 5.3: Organisational abilities to be developed fostered and portrayed (Adapted from the New South Wales Government Public Sector Capability Framework, 2010: 5)

Organisational Culture	Direction	Capacity to Deliver	
Client Focus: <ul style="list-style-type: none"> • Demonstrates service orientation, and • Demonstrates responsiveness. Cultural Awareness: <ul style="list-style-type: none"> • Is culturally aware. Teamwork: <ul style="list-style-type: none"> • Demonstrates commitment to the team; • Treats others equitably, and • Resolves conflict. Taking Ownership: <ul style="list-style-type: none"> • Plans and organises; • Initiates change; • Understands the operational environment; • Acts proactively, and • Acts with integrity. Building Strategic Partnerships: <ul style="list-style-type: none"> • Understands Government structure and key stakeholders, and • Builds relationships and networks. 	Leadership: <ul style="list-style-type: none"> • Develops and communicates vision; • Inspires and motivates; • Creates and develops culture, and • Manages change (overlaps with - and initiates change). Management: <ul style="list-style-type: none"> • Manages people; • Plans for outcomes; • Financial management and governance, and • Manages strategically (overlaps with strategies and thinks strategically). 	Project Management: <ul style="list-style-type: none"> • Initiates and plans; • Controls projects; • Monitors projects, and • Evaluates projects. Communication: <ul style="list-style-type: none"> • Utilises written communication effectively; • Communicates verbally; • Presents and facilitates, and • Influences and negotiates. Analytical Thinking and Problem Solving: <ul style="list-style-type: none"> • Undertakes analysis; • Solves problems; • Demonstrates a systems perspective; • Uses initiative and innovation; • Thinks strategically, and • Uses technology: (Computer- and electronic systems). 	Technical Leadership: <ul style="list-style-type: none"> • Knows role and organisation; • Has technical, occupational and professional knowledge; • Develops and maintains capabilities, and • Applies and provides technical / professional expertise. Policy Development: <ul style="list-style-type: none"> • Undertakes research; • Develops policy, and • Reviews policies for better integration. Commercial Acumen: <ul style="list-style-type: none"> • Understands Business Basics • Applies Commercial and General Economic Knowledge. Client Engagement: <ul style="list-style-type: none"> • Understands client needs; • Ensures quality service delivery; • Resolves issues; • Strives for continuous improvement, and • Demonstrates professional empathy.

The framework defines capability across three broad fundamentals – organisational culture, direction, and capacity to deliver:

- Organisational culture defines those capabilities that are common to all jobs in the public sector. These are the attributes that define public servants as a group of people working together to deliver better outcomes for the people of South Africa. This characterises how public servants relate to colleagues and with others. These capabilities translate sector values such as integrity, service delivery and equity into observable behaviours;
- Direction defines how the NDPW goes about planning, leading, managing and evaluating all that is done, minimising the risks and ensuring that the NDPW's goals and priorities are met, and
- Capacity to deliver defines, as it would seem to suggest, those specific skills, knowledge and abilities which are needed in particular jobs which are common across the public sector, and which are central to delivering on the government's goals for the future. Irrespective whether it is in key account management, project management, procurement, policy development, project budget administration or working with communities.

Each capability has various levels that describe the varying ranges of behaviour that are demonstrated and required across all the levels. These levels are cumulative. The framework can be used to assist with: workforce planning; job design and description; selection and recruitment; managing performance; learning; development and training; career planning, and managing existing talent, which is currently non-existent within the NDPW due to various constraints, particularly due to the inabilities within the HRD. For example, the identification of capabilities required for an individual position will inform recruitment for the position, support performance management and development discussions with the position occupant, and feed into the workforce planning processes of the organisation to identify broader workforce needs and gaps and the strategies needed to fill these.

The capability framework, according to the New South Wales Government (2010: 7), will contribute to the:

- Streamlining of the job description processes by providing a consistent basis for describing capability needs and encouraging the development of generic position descriptions for families of jobs that are common in the agency;
- Better recruitment outcomes as managers and selection panels have a clearer picture of the levels of capability required by positions and appropriate assessment methodologies;

- Managing performance as the capabilities enable managers and staff to reach a clear understanding of job expectations and are an objective starting point for capability assessment and development planning;
- Individual career planning, enabling employees to identify career and development pathways and see the capabilities required for progression;
- Systematic workforce planning, as the capabilities are aligned with business plans and strategies to identify current and future workforce capability needs and gaps, and
- Targeting learning and development activities such as on-the-job training up to specific capability levels, particularly as major training providers increasingly align their programmes to the framework.

5.6 PROJECT EVALUATION

According to the Scottish Government (2012: 7), it is important to evaluate projects successfully and to ensure maximum pay-off from project evaluation. Therefore, the NDPW, as all organisations, must:

- View the evaluation as an integral part of the project and plan for it at the outset. The cost of evaluation should be estimated and resourced as part of the project if being outsourced;
- Secure commitment from senior managers within the NDPW as the accountable officer will be expected to take full responsibility for the management of all stages of all projects;
- Involve all key stakeholders in its planning and execution. For large projects many organisations find it useful to set up an evaluation group at the inception of the project;
- Develop relevant criteria and indicators to assess project outcomes from the outset of the project. The objectives and detailed outcomes should be explicit within the initial agreement;
- Implement mechanisms to enable monitoring and measurement of progress, and
- Foster a learning environment to ensure lessons are learnt.

5.6.1 PROJECT MONITORING, PROJECT EVALUATION AND ANALYSIS OF INFORMATION

The PSO identifies and analyses situations and / or issues, considers options, develops solutions, and decides on, implements and monitors appropriate solutions. Table 5.4 summarises the differences between project monitoring and evaluation, and the role the PSO plays in analysing the information that emanates from the project monitoring and evaluation.

Table 5.4: Monitoring, Evaluating and analysis of information by the PSO (Adapted from the New South Wales Government, 2010: 17-19) - Part 1

Level	Project Monitoring	Project Evaluation	The PSO undertakes the analysis
1	<ul style="list-style-type: none"> • Understands the need to measure and monitor the level of performance. 	<ul style="list-style-type: none"> • Provides basic feedback after project completion. 	<ul style="list-style-type: none"> • Breaks down problems into simple lists of tasks or activities.
2	<ul style="list-style-type: none"> • Responds positively and participates in seeking out areas requiring corrections. 	<ul style="list-style-type: none"> • Provides feedback (what went well, what could have been done differently) after project completion. 	<ul style="list-style-type: none"> • Employs a methodical, logical approach when analysing all data and pays attention to detail; • Builds knowledge and awareness of information sources to aid research and analysis; • Identifies the cause and effect relationship between two aspects of a situation; • Separates situations into two distinct parts and is able to outline pros and cons, and • Prioritises tasks and activities.
3	<ul style="list-style-type: none"> • Implements project quality assurance processes, and • Assists others in measuring progress by communicating clearly on performance and progress indicators. 	<ul style="list-style-type: none"> • Encourages others to provide feedback after project completion, and • Participates in the evaluation of outcomes. 	<ul style="list-style-type: none"> • Interprets data and legislation; • Applies specific technical knowledge or expertise to research analysis; • Presents research findings in an honest, clear and comprehensive manner, and • Breaks down tasks into manageable parts in a systematic way.
4	<ul style="list-style-type: none"> • Measures progress and produces progress reports; • Monitors project budget and contributes to the budget reconciliation process, and • Contributes to the continuous improvement process. 	<ul style="list-style-type: none"> • Organises and records feedback, and • Drafts recommendations for process change. 	<ul style="list-style-type: none"> • Applies sophisticated information and data analysis techniques; • Considers data from numerous sources to make informed conclusions and recommendations; • Evaluates the significance of data and uses it as the basis of recommendations, and • Identifies likely causes and consequences.

Table 5.4 - Part 2

5	<ul style="list-style-type: none"> • Takes corrective action when projects are at risk, and • Implements project monitoring frameworks. 	<ul style="list-style-type: none"> • Implements project evaluation frameworks, and • Ensures feedback is recorded and processes are modified. 	<ul style="list-style-type: none"> • Applies complex analysis; • Makes multiple causal links and considers several potential causes of events; • Considers several consequences of actions; • Analyses relationships among several parts of a problem or situation, and • Anticipates obstacles and exercises forward thinking to next steps.
6	<ul style="list-style-type: none"> • Oversees project monitoring frameworks; • Manages project reporting, and • Recognises when a project is flawed and should not proceed further and argues the case convincingly. 	<ul style="list-style-type: none"> • Oversees project evaluation frameworks; • Evaluates project outcomes, and • Draws lessons from project for continuous improvement. 	<ul style="list-style-type: none"> • Adds value to the analytical process through the compilation, evaluation and analysis of information and professional input; • Develops a preferred option based on context and strategy; • Identifies multiple elements of a problem and breaks down each of those elements in detail, showing causal relationships between them; • Uses several analytical techniques to break complex problems into component parts, and • Uses several analytical techniques to identify several possible solutions, and evaluates the value and benefits of each.

5.6.2 WHAT TO CONSIDER IN THE EVALUATION PLAN

It is very important to consider all the fundamentals that form part of the evaluation plan as summarised by the Scottish Government (2012: 26) where an evaluation plan must include the following:

- A clear view of the objectives and purpose of the evaluation:
 - Who is the audience for the evaluation?
 - What are their information needs?
 - What decisions will the evaluation inform?
- Consideration of the structural context:
 - What is the baseline situation (status quo)?
 - What are the internal and external constraints?
 - What are the desired outcomes?

- Inclusion of a comparative element:
 - Are there plans to conduct a ‘before and after’ assessment?
 - Is it clear what would have happened in the absence of the project?
- Coverage of all relevant project outcomes:
 - Is there a plan to assess immediate, intermediate and ultimate outcomes?
 - Does the plan take into account the processes by which the outcomes are generated?
 - Does the plan consider the impact of the project on patients, staff and other stakeholders?
- An emphasis on learning:
 - What are the lessons?
 - Is there a plan to disseminate the lessons learnt?
 - Is there an action plan to ensure the lessons learnt implemented on future projects?
- Recognition of need for robustness and objectivity:
 - Is the evaluation team equipped with the skills and resources to undertake the evaluation?
 - Should external service providers conduct the evaluation?
 - What should the role of in-house staff be?
 - Are there suitable arrangements to quality-assure the findings?
- Sound methodology:
 - What methods of data collection are used to undertake the study?
 - Are the proposed methods appropriate to meet the objectives of the evaluation?

5.6.3 OBJECTIVES FOR PROJECT EVALUATION

El-Masri (2009: 5) classifies the various elements of project success into five perspectives that must be defined when developing an evaluation plan:

- The behavioural perspective refers to the prescribed activities and processes employed to guide and control the project towards success;
- The technological perspective views the end product as the principal determinant of success where is conceptualised in terms of its quality and functionality;
- The operational perspective views success in terms of the impact of internal organisational aspects such as efficiency and staff performance;
- The business perspective is concerned with the strategic and financial impact on the organisation, and

- The attitudinal perspective represents the psychological aspect that could impede or drive success when viewed as the satisfaction of project stakeholders in regards to the process and the product.

Table 5.5: Project success measures (Adapted from El-Masri, 2009: 7)

Product Success	Items	References
Meeting quality requirements.	Usability, reliability, validity, technical performance, availability, accessibility, error recoverability, security, reusability, responsiveness, understandability, integrity, maintainability, portability, improvability, reusability, installability, information quality, information precision, info completeness, information content, and information format.	Gowan, 2005; Karlsen and Gottschalk, 2004; Amber 2007; Aladwani, 2002; Robey <i>et al.</i> , 1993; Gordon, 1999 Jiang <i>et al.</i> , 2006; Jiang <i>et al.</i> , 2002; Dvi <i>et al.</i> , 2003; Nelson, 2005; Umibe, 1991, Thomas and Fernandez, 2008; Baccarini and Collins, 2004, Turner, 1999; Shenhar <i>et al.</i> , 2002; Baccarini, 1999; Abdel-Hamid, 1999; Barki and Hartwick, 2001; Boehm and Ross, 1989; Subramanian <i>et al.</i> , 2007; Yang, 2001; Wang <i>et al.</i> , 2006; Henderson and Lee, 1992; Wixom and Watson, 2001; Sherif <i>et al.</i> , 2006; Majchrzak, 2005; Ji <i>et al.</i> , 2005; Mithas <i>et al.</i> , 2006; Nelson <i>et al.</i> , 2005; Apte <i>et al.</i> , 1990; Ravichandran and Rai, 2000; Nidumolu, 1996; Barki <i>et al.</i> , 2001; Guimaraes <i>et al.</i> , 2003.
Meeting functionality requirements.	Capability, flexibility, navigability, module growth, customisability, features, and functional correctness.	Aladwani, 2002; Robey <i>et al.</i> 1993; Gordon, 1999 Jiang <i>et al.</i> , 2006; Jiang <i>et al.</i> , 2006; Martin, 2006; Dvi <i>et al.</i> , 2003; Nelson, 2005; Umibe, 1991; Thomas and Fernandez 2008; Baccarini and Collins, 2004; Turner, 1999; Shenhar <i>et al.</i> , 2002; Baccarini, 1999; Barki and Hartwick, 2001; Wang <i>et al.</i> , 2006; Henderson and Lee, 1992; Majchrzak, 2005; Ji <i>et al.</i> , 2005; Mithas <i>et al.</i> , 2006; Nelson <i>et al.</i> , 2005; Ravichandran and Rai, 2000; Nidumolu, 1996; Deephouse <i>et al.</i> , 1995; Barki <i>et al.</i> , 2001; Guimaraes <i>et al.</i> , 2003.

Table 5.6: Operational- and business success, and stakeholder satisfaction measures to be considered when evaluating projects (Adapted from El-Masri, 2009: 8)- Part 1

Operational Success	References
Staff productivity, operations efficiency, decision making, quality of decision-making, centralisation and control, staff productivity, operational efficiency, throughput, reduced delivery lead-times, reduced order fulfilment errors, reduced client unanswered calls, reduced raw material inventory, reduced resource utilisation, and reduced waste.	Lucas <i>et al.</i> , 1988; Barki <i>et al.</i> , 2001.; Barki <i>et al.</i> , 1993; Thong <i>et al.</i> , 1994; Irani and Love, 2000; Wang <i>et al.</i> , 2007; Nidumolu and Subramani, 2003; Thong <i>et al.</i> , 1997; Sillince and Mouakket, 1998; Bradley <i>et al.</i> , 2006; Cotteleer and Bendoly, 2006; Palvia <i>et al.</i> , 1992; El Sawah, 2008.

Table 5.6 - Part 2

Business Success	References
Strategic items: project completed date, client relations, competitive position, organisational image, organisational learning, market share, market penetration, market creation, product line creation, response to business or competitive threat, and strategic partnership.	Dvir <i>et al.</i> , 2003, Thong <i>et al.</i> , 1997; Markus <i>et al.</i> , 2000; Shenhar <i>et al.</i> , 2002; 2003; Kearns, 2007; Soh <i>et al.</i> , 2006; Bhatt and Grover, 2005; Tam, 1998, Nidumolu and Subramani, 2003; Barki <i>et al.</i> , 2001; Barki <i>et al.</i> , 1993, Thong <i>et al.</i> , 1994, Nelson, 2005, Atkinson, 1999.
Financial items: project cost, labour cost, manufacturing cost, return on investment, financial health, profitability, sales revenues, and operating costs.	Cats-Baril and Tawfik 1994, Kearns 2007; Thong <i>et al.</i> , 1997; Markus <i>et al.</i> , 2000; Shenhar <i>et al.</i> , 2002; Dvir <i>et al.</i> , 2003; Kearns, 2007; Soh <i>et al.</i> , 2006; Bhatt and Grover, 2005; Tam, 1998; Barki <i>et al.</i> , 2001; Barki <i>et al.</i> , 1993; Thong <i>et al.</i> , 1994; Irani and Love 2000; Wateridge, 1998.
Stakeholder Satisfaction	References
Process satisfaction: End-user satisfaction with the process. PM's, consultants' and contractor's satisfaction with the process, end-user satisfaction with the project team, staff satisfaction with their work and personal development, stakeholder satisfaction with the process, end-user satisfaction with communication quality, end-user satisfaction with involvement.	Wixom and Watson, 2001; Sharma and Yetton 2007; Andres and Zmud, 2001; Doll <i>et al.</i> , 1995; McKeen and Guimaraes, 1997; Jiang <i>et al.</i> , 2001; Ginzberg, 1978; Lin and Shao 2000; Pereira <i>et al.</i> , 2007; Espinosa <i>et al.</i> , 2006; Gelderman, 1998; Gowan, 2005; Aladwani, 2002; Nelson, 2005; Baccarini, 1999; Barki and Hartwick, 2001.
Product satisfaction: end-user satisfaction with the system performance, end-user satisfaction system quality, end-user satisfaction with the information quality, personal satisfaction with system, overall satisfaction with the system.	Wixom and Watson, 2001; Sharma and Yetton 2007; Guimaraes <i>et al.</i> , 2003; Ginzberg, 1978; Gelderman, 1998; Gowan, 2005; Nelson, 2005; Baccarini, 1999; Barki and Hartwick, 2001; Naveed, 1996; Soja, 2006; Xia and Lee, 2004; Umibe, 1991; Dvir <i>et al.</i> , 2003; Wixom and Todd, 2005; Nelson <i>et al.</i> , 2005; Au <i>et al.</i> , 2008; Nidumolu <i>et al.</i> , 1996; McKean <i>et al.</i> , 1994; Doll and Torkzadeh, 1989; Thong <i>et al.</i> , 1997; Lucas <i>et al.</i> , 1988.

Typical objectives for an evaluation, according to the Scottish Government (2012: 34), must:

- Assess value for money;
- Assess whether and how the objectives of the project are being met;
- Assess whether project is progressing according to plan and identify corrective actions;
- Document the lessons to be drawn for others and for the future;
- Identify actions to consolidate current implementation;
- Identify opportunities for improving current performance, and
- Take stock for the future: identify next steps.

5.6.4 THE PROJECT EVALUATION FRAMEWORK: THE ‘WHAT’ AND THE ‘HOW’ OF PROJECT EVALUATION

Through triangulation of the literature review, the findings of the questionnaire, individual interviews, workshops and intervention meetings, the respondents provided insight into the way project success is understood and how the level of success should be evaluated. The ‘what’ and ‘how’ of evaluating is summarised as follows:

- **Project cost** – It is clear that the NDPW has to assess three different types of cost. Direct and indirect internal cost of delivering projects, cost of consultants and cost of construction versus estimates generated during each phase of the project. The former cost will be more difficult to determine unlike costs related to consultants and the actual construction. Some respondents noted comparisons should be made between agreed project costs or limits set at the beginning of the project, not necessarily the contracted price. It was also suggested that an overall cost deviation of + or - 10% is acceptable, but a greater deviation than this would indicate failure. A cost deviation of + 5% of non-scheduled items would indicate failure;
- **Time** – Requires distinguishing between the different phases of the project and not just the construction period, i.e. conception, briefing, planning, procuring, construction and project closeout, and derive specific timeframes for each phase for each project. As for the actual construction phase itself, the respondents argue that the measure of estimated time should include extensions and / or reductions due to variations in the original scope of the works, rather than measuring against the original baseline. Any deviation of +/- 5% to +/- 10% is deemed to be acceptable, but greater deviation than this would indicate failure;
- **Quality / meeting specification** - Respondents noted that measuring success is to determine whether the project was completed in accordance with the specifications and / or whether the project demonstrated fitness for purpose. It is recommended that the level of permissible deviation must be determined at the project inception or briefing stage and affirmed at the planning completion stage prior to inviting bids;
- **High standard of work** - Respondents stated that a high standard of workmanship is required. Work undertaken should exceed the current industry standards based on national or international benchmarks. Some respondents noted that defects should be limited and minimum rework required compared with the overall project effort. It was however acknowledged that South African construction industry currently has a major shortage of suitably qualified and experienced artisans and labour force;
- **Achieving scope** - Achieving scope requirements was identified as a separate criterion to the issue of quality or technical performance. Respondents noted that achieving scope objectives could be assessed in terms of whether the original scope of the project was

completed and whether all elements of the project were delivered. This was considered to be a success criterion independent of meeting the specification requirements. Any deviation of +or - 5% to +or - 10% is deemed to be acceptable, but greater deviation than this would indicate failure;

- Cooperation - Cooperation includes smooth project team co-ordination, an efficient and harmonious project team, good relations with the client and end users, no unresolved disputes, and cooperation between stakeholders, authorities, service providers and any other role players;
- Project objectives and organisational goals - Respondents observed that meeting the objectives of the project agreed at the inception of the project should be considered a measure of success, even though the particular objectives of each project are unique and divergence must be agreed to at the time of determining the project objectives;
- Project management process - Respondents observed good project management practices as a criterion for project success. Good project management includes both the NDPW and the client being satisfied with the project management process, the project having been under control at all times, accurate reporting in a timely manner, efficient resource usage, monitoring and controlling, accuracy in forecasting, appropriate change control methodology, and ease of project delivery;
- Stakeholder satisfaction – Some respondents did not specifically differentiate between the different types of stakeholders, but did identify ‘stakeholder satisfaction’ as a success criterion. The importance of the NDPW’s different departments and the implementing agent and the custodian, client, end user, the contractor / s, local authority, and the local community are just a few stakeholders that form part of the project implementation process and their level of satisfaction was also identified by respondents;
- Team members’ satisfaction - Stakeholder satisfaction is considered a measure of project success. Project team members being the PM and the consultant team are a specific stakeholder group and their satisfaction was identified separately to stakeholders in general. Respondents indicated that team members should all derive a benefit and satisfaction from working on the project including job satisfaction, having their professional and personal aspirations met, be proud of the project, and have high morale;
- Cost efficiency of the end product - This criterion relates to the product of the project over its operational life. Success criteria were identified as costs and returns meeting planned outcomes, running costs meeting expectations, maintenance costs minimised, value for money, whether life cycle cost expectations have been met, and cost benefit realisation;

- Risks managed - Risk management including the mitigation of risk, was identified separate from the criterion 'project management process.' Respondents specifically looked for clear risk identification, allocation & management; risk mitigation; along with only identified risks occurring i.e. no unpleasant surprises or crises occurring;
- Extent of scope change from the original project brief – Respondents noted that the extent to which the original project brief has changed to the final product is crucial as this has a major impact on cost and time slippages throughout the project life cycle. Any deviation of + or - 5% to + or - 10% is deemed to be acceptable, but greater deviation than this would indicate failure;
- Change management – Variation orders are common on all projects. Respondents noted the way the change process is managed and the number of changes to the project as a success criterion. Respondents believed good procedures to manage change reflected success while others determined success by the number of changes made. To some 'nil variations' and 'number of change requests' was the success criterion. To others the origin of the changes was more important. Be it increased scope courtesy of the client, design changes to improve constructability, design changes to improve functionality of the building, specification changes in materials to be used, or variation orders to effect changes that could have been foreseen by the design team which was not specified;
- Meeting standards - Different from the criteria of 'quality / meeting specification', in this instance 'meeting standards' generally referred to meeting quality standards, being independently certified and limiting non-conformances. Appropriate standards such as the ISO, SABS and SANS standards and all relevant engineering and other standards in terms of national building regulations, and municipal by-laws;
- Health and safety - Safety criteria included whether safety targets were met or exceeded, a safe project, no accidents, excellent safety record, no accidents or injuries during delivery, and achieving satisfactory safety reports. Some respondents suggested that monetary penalties be imposed for non-compliances;
- Environmental management – Respondents noted meeting environmental obligations, regulatory compliance, and environmental management plan targets as a success criterion. Energy conservation, saving water and any 'green building' initiatives form part of the success criteria. The criteria also included whether a proper environmental management plan was developed, implemented, monitored and reported on. It was also suggested that monetary penalties be imposed for non-compliances;
- Satisfies end user's needs - respondents identified another specific stakeholder group, the end user. Clients and project end-users are often combined together as one group, although

the two groups can be very different. Satisfying user's needs refers to concern for the end user or occupant of the building and even the general public visiting the building for whatever purpose;

- Community acceptance - A further stakeholder group is the community or public. Respondents identified community and public acceptance or approval, meeting the social objectives, standards and expectations of the community as success criteria. This is also deemed to include local employment, sourcing local materials and transferring skills through specific training programmes such as the EPWP;
- Personal development and enjoyable project environment - As well as team members being satisfied with the outcome of the project, respondents also noted the need for personal development. This involves the creation of a constructive, supportive and enjoyable project team environment where team members can grow personally and professionally;
- Continuing relationships – Some respondents believed that it important to develop a good relationship throughout the duration of the project and then continue these relationships with project participants on the next project. Respondents argued that project stakeholders, especially the major stakeholders, should have the same respect and rapport upon the completion of the project as at the beginning, that relationships would not only be upheld, but also improved, and that all project participants would want to work together again;
- Procurement process – The process of procuring the services of suitable consultants and contractors is very important in terms of time delays, efficiency and effectiveness of the processes as well as the capabilities of the appointed service providers;
- Budget forecasting and expenditure – Respondents indicated that the extent to which budgets are correctly forecasted and expenditure targets are met is important to the performance assessment of both PMs and the organisation as a whole;
- Project recognition - The criterion of project recognition refers to peers' opinion, positive publicity received about the project, awards won by the project (if any), board recognition, recognition by peers and competitors, good market or public opinion of the product and publicity is favourable;
- Client contribution toward project success - From an industry perspective the construction client must be able to work with different parties in the industry, brief the implementing agent of their real needs and understand the necessary procurement processes. The client must also be able to manage and monitor the implementation of the project and add real value during the planning phase ensuring that the final designs are in accordance with their operational needs. Some respondents noted that the client's contribution towards making a

project a success must not be underestimated, hence the necessity to make the level of the client's contribution also part of the success criteria, and

- Organisational contribution toward project success - To what extent has NDPW adopted best practices in their approach to establish project management as the corporate methodology where everyone within the supply chain understands their contribution toward achieving project success? The extent to providing the necessary support to the PM and the professional team and be able to assess tenders taking into account soft values, e.g. competence and credibility without prejudice and allowing one element to take preference to the detriments of the project is an absolute necessity.

The elements of evaluation and questions can be structured to relate to whether due process was followed, achievement of the required outputs, actual outcomes / impacts versus what was desirable, and alternatives to what was done as well as lessons learnt.

5.6.5 STEPS IN EVALUATING PROJECTS

5.6.5.1 Step 1: Evaluation planning - developing evaluation approaches, questions and criteria

Mapping the evaluation object and purposes creates the necessary conditions in which evaluation questions and criteria are clearly defined. Any one evaluation, according to Cullen *et al.* (2007: 56-57), may embody a number of, sometimes conflicting, purposes. Each purpose shines the spotlight of the evaluation on a slightly different part of the initiative and will require different evaluation questions to be asked. Purposes of planning and efficiency relate to questions around value for money. Methods often used to answer these questions include cost-benefit analysis or objective-driven techniques.

Purposes of accountability are also concerned with the efficient and effective use of resources and lead to questions such as how successful the programme has been and whether or not it has met its targets and had its desired impact. Evaluation for accountability purposes can resemble the work of auditors by using indicators to measure against relevant standards and benchmarking against similar initiatives. Cullen *et al.* (2007: 57) argue that evaluations designed to improve implementation will ask questions about the functioning of management and partnership arrangements, if the initiative delivered on schedule and as intended, and if it is targeting its desired audience correctly. Evaluations concerned with implementation are often formative: immediate \leq 1 month, short term \leq 1 year, medium term 1-3 years and long term –

more than 3 years, which take place alongside the delivery of the initiative for feedback of information in real-time to programme or PMs.

Formative evaluations tend to be more descriptive, fully describing processes and interim outputs or outcomes. Cullen *et al.* (2007: 57) argue that evaluations seek to determine whether an initiative is working and the reasons for the level of success achieved, and may attempt to draw conclusions that could apply to similar initiatives. Experimental methods are associated with answering ‘what works?’ questions, but are often only appropriate in very limited circumstances. Realist methods are more readily applicable to programmes or projects, which employ complex mechanisms to achieve their aims.

When the purpose of an evaluation is to strengthen processes or organisation, the questions important to programme custodians and other stakeholders come to the fore. Managers often wish to know both how to strengthen their capacity and how to increase involvement of target groups in the initiative. Appropriate approaches and methods are often participatory and collaborative. Evaluations can be designed with the intention of developing or shaping the initiative on an on-going basis, which can be similar to evaluations concerned with improving implementation. There will however also be expectations that changes will be made to the nature of the evaluation object (the initiative) itself. Evaluation questions will thus be related to questions of programme or project design. Methods of action research are traditionally associated with this purpose.

Evaluation criteria is for determining the success of the initiative, clustered around different types of evaluation purposes and clusters of specific evaluation questions. Criteria and questions that are relevant to an evaluation will vary from initiative to initiative. The selection of methods and techniques will be highly dependent on the object and purposes of evaluation. Cullen *et al.* (2007: 61-62), and the Scottish Government (2012: 35) offer some broad guidelines in this respect:

- Operational evaluations that concentrate on providing real-time monitoring and support for project management typically entail the on-going collection of data from a limited number of key role players on the project, for example, PMs, key account managers and supply chain staff. Commonly-used techniques are structured interviews, focus groups, and task analysis reflecting on why particular decisions were made;
- Evaluations that focus on accountability aspects such as the institutional arrangements of an initiative and how that initiative was managed typically involve: surveys of participants;

critical incidents analysis - why certain decisions were taken and what were the consequences; socio-metric mapping - plotting interactions and communications patterns between key actors; systems modelling - what would have happened if one part of the structure had been changed, and content analysis of meetings and instructions, and

- Effects are evaluations that consider, for example, the ways in which target users responded to a science and society intervention, and in what ways their behaviours changed, typically utilise questionnaire surveys, interviews and focus groups, and critical incidents analysis. These methods are normally used retrospectively. In contrast, observation, diaries and logs, and content analysis are normally used in real-time as the intervention develops.

5.6.5.2 Step 2: Collecting the data and analysis

Cullen *et al.* (2007: 62) and the Scottish Government (2012: 51-53) highlight a few important aspects to consider in the implementation and analysis stage of the evaluation:

- Contingency planning: as with planning an evaluation in general, anticipating adjustments and changes to data collection is to be encouraged. It is useful to have a 'plan B' with alternative arrangements for data collection should it become apparent that, for example, time, skills or operational constraints are likely to conspire against planned activities;
- Triangulation: means utilising different methods to cover the evaluation from different angles and from different points of view of different stakeholders and participants);
- Analysis requirements: it should be borne in mind that the selection of particular methods and techniques also implies using the appropriate type of data analysis (which has its own resource and skills implications). In general, large data sets, as derived from surveys, normally need statistical software systems such as SPSS. Interpretative data (derived, for example, from content analysis) can be analysed with proprietary qualitative software packages. A clear coding frame to analyse data is necessary, and
- Operational rules: the evaluation should be able to track (and have a record of): what data are being collected, who collects the data, and in what form and location the data are stored. Clear rules about operational procedures should be set out and distributed to all those involved in data collection and analysis. Similarly, it is useful to draw up 'evaluation contracts' with other stakeholders, especially those supplying information. These contracts should specify the objectives of the evaluation and any guarantees that apply (for example, on confidentiality).

Cullen *et al.* (2007: 61-62) summarise a number of methods and associated evaluation techniques in Table 5.7.

Table 5.7: Evaluation methods and associated evaluation techniques (Cullen *et al.*, 2007: 61-62) - Part 1

Method	Typical techniques	Typical context of use	Pros and Cons
Surveys	Interviews Mapping Questionnaires	<ul style="list-style-type: none"> • All-purpose; • Operational: mapping interactions between actors; • Summative: user satisfaction; user impacts, and • Learning: surveys of participants' experiences. 	<ul style="list-style-type: none"> • Is easy to conduct; • Can produce large numbers of responses; • Limited depth in questionnaire surveys (less in interviews and focus groups), and • Good in outcome-linked evaluations.
Field studies	Observation Task Analysis Critical incidents Ethnography Case studies Diaries	<ul style="list-style-type: none"> • All-purpose. • Summative: how users respond to intervention; • Operational: how institutional structures operate; • Learning: retrospective analysis of what happened, and • Comparison of different settings. 	<ul style="list-style-type: none"> • In-depth data, giving insights on social construction of intervention; • Time consuming and skill intensive, and • Difficult to utilise in outcome linked evaluations.
Modelling	Simulations Soft systems	<ul style="list-style-type: none"> • Usually operational and learning modes; • Assessing organisational structure, dynamics and change; • Cost-benefit analysis, and • Optimisation of management functions. 	<ul style="list-style-type: none"> • Can predict possible outcomes to adjustments in uncertain and complex contexts; • Sometimes highly abstract, and • Requires high level of skill.
Interpretative	Content analysis	<ul style="list-style-type: none"> • All purpose -used in operational, summative and learning from deconstruction of programme reports. 	<ul style="list-style-type: none"> • Deconstruction of 'hidden' meanings and agendas; • Rich interpretation of phenomena, and • Inherent risk of ideological bias.

Table 5.7 - Part 2

Critical	Discourse analysis	<ul style="list-style-type: none"> • More theoretical based than content analysis. Typically used to assess structure, coherence and value of large-scale programmes for 'learning' purposes. 	<ul style="list-style-type: none"> • As for interpretative methods, but emphasises establishment of general laws, and • Perceived to be 'unscientific'.
Participatory	Action research	<ul style="list-style-type: none"> • Typically in developmental evaluation mode. 	<ul style="list-style-type: none"> • Encourages real engagement of 'subjects' of intervention; • Good in highly uncertain contexts, and • Evaluators sometimes get 'too involved' in the intervention itself.

5.6.5.3 Step 3: Reporting and dissemination

Cullen *et al.* (2007: 63) and the Scottish Government (2012: 54) advocate that generally, it is important to the reputation, value and impact of the evaluation to give final formal feedback to everybody who has contributed in some way to the evaluation.

The final report acts as the memory or history of the project. It is the file that others can study the progress and impediments of the project'. To promote consistency, according to the Scottish Government (2012: 54), the content of the evaluation report should, as far as possible, address the following issues:

- Were the project objectives achieved?
- Was the project completed on time, within budget, and according to specification?
- Are users, patients and other stakeholders satisfied with the project results?
- Were the success criteria achieved?
- Overall success of the project – taking into account all the success criteria and performance indicators, was the project a success?
- Organisation and implementation of project – were the correct processes followed?
- In retrospect, could the project have been planned and implemented in a better way?
- What lessons were learned about the way the project was developed and implemented?
- What went well? What did not proceed according to plan?
- Project team recommendations – record lessons and insights for posterity. These may include, for example, changes in procurement practice, delivery, or the continuation, modification or replacement of the project.

Dissemination, according to Cullen *et al.* (2007: 62), should not be restricted to the circulation of a final report – especially in the case of ‘developmental’ process evaluation. Different stakeholders may require different communication approaches. These may include:

- Short summaries of the evaluation, tailored to different audiences;
- Journal articles for other researchers;
- Topical articles in the ‘trade’ press;
- Workshops for specific audiences, and
- Feedback seminars for key decision-makers.

Bruzon & Mudge (2007: 8) and Cullen *et al.* (2007: 62) also add that the dissemination outputs should be consistent with the ‘purpose’ of the evaluation as defined in the initial preparatory and design phases. In other words, evaluations should be designed in terms of the decisions and actions it will inform. It is not always easy to reflect this in recommendations, especially when some stakeholders may not readily recognise the relevance of such recommendations. The art of making useful recommendations lies in:

- Understanding the context in which the audience operates;
- Addressing future realities rather than dwelling on the past;
- Clarifying choices based on realistic options, and
- Indicating how recommendations can be implemented in practice.

5.7 THE VALIDATION OF THE PSO MODEL AND THE PROJECT EVALUATION FRAMEWORK

The development of the questionnaire used in the assessment of the PSO Model and the Project Evaluation Framework was based on the theoretical model for implementing the PSO (Sections 5.2 and 5.3) and the project evaluation framework (Section 5.6). The sample stratum consisted of key NDPW staff, PMs, private consultants, clients, and contractors who have worked on projects of the NDPW. The consultants and contractors selected had worked with at least two of the NDPW regional offices. The questionnaire was electronically circulated to 150 potential respondents, of which 119 replied. Eight questionnaires were not delivered, which resulted in a net response rate of 83.8% [119 / (150-8)].

The structured questionnaire consisted of six questions. Four of the questions were closed-ended and two were open-ended. The four close-ended questions were five-point Likert scale type questions, which also included an ‘unsure’ response option. The high response rate is attributed to the fact that the researcher is employed by the NDPW as a Chief Construction Project

Manager who has interacted with the sample stratum and respondents over a period of twelve years. The researcher's tenacity in following-up, reminding respondents to submit the questionnaires and arranging personal interviews with respondents also attributed to the positive response rate.

5.7.1 RESPONDENT PROFILES

Part 1 of the questionnaire sought to establish the demographic information of the respondents:

Table 5.8 illustrates the capacity in which the respective respondents have been involved in on projects of the NDPW. Most of the respondents are consultants (53.8%) followed by contractors (21.8%).

Table 5.8: Capacity in which the respondents have been involved in on the NDPW projects

Capacity	n	%
Clients	7	5.9
Consultants	64	53.8
Key NDPW staff	6	5.0
PMs	16	13.4
Contractors	26	21.8
Total	119	100

Table 5.9 indicates that respondents are experienced in that 60.5 % of respondents have more than 20 year experience, 22.7% between 15 and 20 years in the construction industry which is deemed sufficient experience.

Table 5.9: The respondents' years of experience in the construction industry and their field of expertise in construction projects

Experience	n	%
1-5 years	6	5.0
5-10 years	9	7.6
10-15 years	5	4.2
15-20 years	27	22.7
> 20 years	72	60.5
Total	119	100

Table 5.10 indicates that respondents are experienced in that 42% of respondents have been involved on more than 20 NDPW projects, and 24.4% between 15 and 20 NDPW projects meaning that they have worked with various projects managers and have good insight on how the NDPW implements projects.

Table 5.10: The number of NDPW projects on which the respondents have been involved in

Number of projects	n	%
1 - 5	13	11.0
6 - 10	13	11.0
10 - 15	14	11.8
15 - 20	29	24.4
> 20	50	42.0
Total	119	100.0

Table 5.11 illustrates that respondents have worked on a broad spectrum of projects with different project values. This implies that the respondents would have worked with different PMs on different projects with variable degrees of complexity and contract values.

Table 5.11: Average Rand value of NDPW projects on which the respondents have been involved in

R - Million	n	%
< 1	2	1.7
1 - 5	14	11.8
6 - 10	14	11.8
10 - 15	13	10.9
15 - 20	24	20.2
> 20	52	43.7
Total	119	100

Projects in excess of R20 million are generally managed by senior PMs who are generally more experienced and suitably qualified. This implies that respondents have worked with both the more junior and senior PMs to formulate a perception of how effective and efficient the NDPW implements projects and the manner in which projects are managed. It is notable from Table 5.11 that the respondents' exposure to different projects of the NDPW is an appropriate representation.

5.7.2 ASSESSMENT OF THE PSO MODEL

The aim of this assessment is to determine whether the establishment of PSOs within the regional offices will improve project implementation within the GPIAs and project performance (Question 1).

Respondents were required to indicate on a scale of 1 (strongly disagree / unimportant) to 5 (strongly agree / very important) noting the 'unsure' option, as to what extent the respondents agreed that the establishment of PSOs in regional offices of the GPIAs would improve project

implementation. In terms of necessity / importance the mean MS is 4.41 and all fifteen reasons (100%) achieved MSs > 3.00, which means it is deemed important as opposed to not important. However, twelve of the fifteen reasons (80%) MSs > 4.20 ≤ 5.00, and thus the reasons can be deemed to be between more than important to very important / very important, as reflected in Table 5.12.

Table 5.12: The necessity for establishing PSOs within the regional offices of the NDPW

Reason	MS	Rank
Improved project briefings - Reduced aborted design work and project planning time.	4.75	1
Easy access for all stakeholders to a well-informed standardised knowledgebase.	4.67	2
Improved quality of project deliverables and reduced turnaround time in decision-making.	4.66	3
Better communication with clients and stakeholders - Increased communication and coordination across project portfolios.	4.61	4
Reduced time to get up to speed on new projects - Reduced project lifecycle time.	4.61	5
Best-practices and lessons learned brokerage - More opportunities to leverage and reuse knowledge to standardise.	4.55	6
Early identification and proactive management of project issues and risks.	4.55	7
Improved perceptions of the NDPW as an organisation by the clients, consultants, contractors and the public as the end users.	4.55	8
Better containment and management of project scope.	4.48	9
Improved reporting for decision-making.	4.34	10
Improved accuracy of cost and time estimates.	4.29	11
More effective and efficient procurement of services providers, both consultants and contractors.	4.26	12
Reduced organisational internal project costs because common tasks are managed at the PSO level.	4.09	13
Reduced overall project delivery costs in terms of consultants and construction.	3.87	14
Competent workforce of PMs and supply chain support.	3.81	15
Mean MS	4.41	

Ranked first is to improve project briefings that will reduce aborted design work and project planning time and ensure a comprehensive scope with a MS of 4.75. Ranked second is to provide easy access for all stakeholders to a well-informed standardised knowledgebase with a MS of 4.67, followed by ensuring improved quality of project deliverables and reduced

turnaround time in decision-making with a MS of 4.66. Ranked fourth is to reduce the time to get up to speed on new projects and reducing project lifecycle with a MS of 4.61. Fifth ranked is to improve communication with clients and stakeholders and improve coordination across project portfolios with a MS of 4.61. Ranked sixth is improved perceptions of the GPIAs as an organisation by the clients, consultants, contractors and the public as the end users with a MS of 4.55. Ranked seventh is the early identification and proactive management of project issues and risks with a MS of 4.55. Eighth is best-practices and lessons learned brokerage by creating more opportunities to leverage and reuse knowledge to standardise with a MS of 4.55. Ninth ranked is better containment and management of project scope with a MS of 4.48. Ranked tenth is improved reporting for decision-making with a MS of 4.34, and eleventh improved accuracy of cost and time estimates with a MS of 4.29. Twelfth ranked is to appoint more effective and efficient procurement of services providers, both consultants and contractors with a MS of 4.26.

Three of the fifteen reasons (20%) MSs $> 3.40 \leq 4.20$, and thus the reasons can be deemed to be between important to more than important / more than important. Ranked thirteenth is reduced organisational internal project costs because common tasks are managed at the PSO level with a MS of 4.09, followed by reduced overall project delivery costs in terms of consultants and construction with a MS of 3.87. Ranked thirteenth is the establishment a competent workforce of PMs and supply chain support with a MS of 3.81. The reliability of scale relative to improvement in project implementation of establishing PSOs within the regional offices of the GPIAs achieved a Cronbach alpha score of 0.935, which is deemed very good.

Table 5.13 illustrates that most of the respondents (88.7%), either agreed (36.1%) or strongly agreed (52.7%) that establishing PSOs within the regional offices of the NDPW will indeed improve project implementation and project success rates while 2.5% were unsure, 0.7% disagreed, and 8.1% remained neutral. It is notable that none (0%) of the respondents strongly disagreed.

Table 5.13: The necessity of establishing PSOs in regional offices

Response (%)					
Unsure	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.5	0.0	0.7	8.1	36.1	52.7

Conversely, a small number of respondents were particularly unsure (2.5%) or remained neutral (8.1%) on the following rudiments, which can be attributed to their lack of insight and / or understanding of the statements:

- Item 11: Improved accuracy of cost and time estimates (MS 4.29). One of the key functions of the PSO would be to assist the PM and project team to establish the scope of work as early within the project life cycle as possible to avoid unnecessary delays and possible abortive design work. The consultant team would then be better equipped to submit more realistic programmes and estimates based on the scope of works.

Currently programmes and project estimates are primarily influenced by the ever-changing project scope and delays in finalising designs. Cognisance is taken of the fact the accuracy of estimates would still depend on the ability of the appointed quantity surveyor to generate accurate estimates once the actual scope has been established, which is more manageable;

- Item 12: More effective and efficient procurement of service providers, both consultants and contractors (MS 4.26). The PSOs will identify pitfalls of procuring the services of services providers and make recommendations to improve procurement policies via the PMO. Currently nobody is driving the process of improvement due to the lack of capacity, capability inefficiencies, and the lack of active participation and directional leadership within the NDPW head office. Current processes are also more politically influenced than factual based that often increases the turnaround time in decision-making, especially within head office;
- Item 13: Reduced organisational internal project costs because common tasks are managed at the PSO level (MS 4.09). For example, instead of having PMs to do their own returnable documentation the PSO, who is up to date with the latest forms and procedures, can do it on their behalf. Another example is when a person within the PSO can be tasked to fulfil a specific function or follow up on enquiries instead of various PMs doing the same activities while time could have been spent more constructively in actually managing the projects;
- Item 14: Reduced overall project delivery costs in terms of consultants and construction (MS 3.87). Finalising the scope of work as early as possible and resolving problems and design enquiries will reduce disbursement costs of the consultants for travelling to and from planning meetings, avoid abortive design work, and possible under or over design that will

impact on both the consultants and the construction costs that would negatively impact on the project cash flows, and

- Item 15: Competent workforce of PMs and supply chain support (MS 3.81). One of the key responsibilities of the PSO is to evaluate and train project staff up to the same level of competence that would facilitate professional registration of all PMs that would increase competency levels.

The reliability of scale relative to improvement in project implementation of establishing PSOs within the regional offices of the NDPW achieved a Cronbach alpha score of 0.935, which is deemed very good.

Question 2 was an open-ended question where the respondents were required to comment in general with regards to establishing PSOs in the regional offices on the NDPW. Responses included, *inter alia*:

- “PSOs need to be manned and managed by competent and experienced personnel in all consulting disciplines otherwise PSOs will not serve any useful purpose. Proper training, mentoring and succession planning is required”
- “PSOs need to have delegated authority in order to cut down on decision making time and approval of payments and variations”
- “Majority of PMs need guidance in terms of departmental processes and technical issues in determining the scope of works that will reduce turnaround time in decision-making and aborted design works”
- “Will only work if the PSO has the delegated authority to rule on decisions taken at planning and intervention meetings. Must also be represented on bid evaluation and bid committees”
- “Establishing PSOs in regional offices is the only way that the NDPW can standardise and improve as an organisation as the methodologies, experiences and competencies of different offices differ vastly”
- “PSO must be staffed with competent, suitably qualified and experienced staff with vast knowledge of the NDPW processes and standards as well as construction technology and different skill sets”
- “It is vital not to include people in the PSO merely because of their occupation or field of knowledge. The PSO staff must be motivated to improve the current status quo, have a positive attitude, self-driven and have a non-political attitude”

- “PSO staff must have skills of visible leadership in such a complex multi- disciplinary organisation with a political context such as the NDPW”
- “The PSO is to heighten the organisational awareness of the importance of integrating project management procedures and culture into the organisation from top down which will only be attained by full management support and buy-in”
- “The PSO must maintain the focus of the organisation on both qualitative and quantitative aspects of project management that requires competent people in the PSO”
- “The PSO should be seen as a dynamic addition to the project implementation process that must be adopted and supported by all in order to be successful”
- “I see it as an integral step in improving service delivery from the NDPW’s side”
- “PSO can only assist the task of the PMs and consultants delivering for the NDPW”, and
- “While the establishment of a PSO and its primary objectives is fully supported, at the end of the day its success will be highly dependent on pro-active PMs. The PSO will enable, amongst others, for information to be centrally based, but if the PM's are not pro-active or expedient enough, projects may still suffer.”

Both the need for and the principles of establishing PSOs within the regional offices of the NDPW is thus supported.

5.7.3 ASSESSMENT OF THE PROJECT EVALUATION FRAMEWORK

The aim of the assessment of the project evaluation framework (Question 3) was to determine whether constructive project evaluation of the NDPWs’ projects would induce organisational learning and improve project implementation as a whole.

Table 5.14 illustrates the necessity / importance to assess key objectives relative to ten reasons in terms of mean scores (MSs) based upon responses to a scale of 1 (strongly disagree / unimportant) to 5 (strongly agree / very important), including the ‘unsure’ option. In terms of necessity / importance the mean MS is 4.55, and all ten reasons achieved MSs > 3.00, which means it is deemed necessary / important as opposed to not necessary / not important to evaluate projects. All ten reasons for evaluating projects MSs > 4.20 ≤ 5.00, and thus the reasons can be deemed to be between more than important to very important / very important.

Table 5.14: The importance of evaluation programmes

Reasons	MS	Rank
Was the project completed on time, within budget, and according to specification?	4.78	1
Are the clients, end-users and other stakeholders satisfied with the project results?	4.75	2
Were the project objectives achieved?	4.66	3
Project team recommendations – record lessons and insights for posterity. These may include, for example, changes in procurement practice, delivery, or the continuation, modification or replacement of the project or any aspect thereof.	4.60	4
Overall success of the project – taking into account all the success criteria and performance indicators, was the project a success?	4.60	5
Were the business case forecasts (success criteria) achieved?	4.56	6
What went well? What did not proceed according to plan?	4.46	7
What lessons were learned about the way the project was developed and implemented?	4.45	8
In retrospect, could the project be planned or implemented better?	4.36	9
Organisation and implementation of project – were the correct processes adopted?	4.30	10
Mean MS	4.55	

Ranked first is whether the project was completed on time, within budget, and according to specification with a MS of 4.78. These are generally the most important project objectives that would determine whether the project was a success or failure. Ranked second is whether the clients, end-users and other stakeholders were satisfied with the project results with a MS of 4.75, which determines the level of client satisfaction achieved and willingness to make use of the GPIA's service in the future. Ranked third is whether all the project objectives were achieved with a MS of 4.66. Other objectives include meeting socio economic objectives such as achieving training and development targets, making use of local labour, suppliers and contractors, and whether the building is suitable for the intended use. Recommendations from the project team where lessons learnt and insights for posterity are recorded is ranked fourth with a MS of 4.60. For example, changes in procurement practice, delivery, or the continuation, modification or replacement of the project or any aspect thereof. Ranked fifth is whether the project was an overall success, taking into account all the success criteria and performance indicators, with a MS of 4.60. This may include how successful the project was managed, level of communication and team work, team satisfaction, extent of scope changes, stakeholder management, risk management and turnaround time in decision making.

Ranked sixth is the achievement of business case forecasts with a MS of 4.56. General business case forecasts such as whether the building was completed in time for the intended use, the impact on the client's operations, the project's strategic value versus the business impact and the realisation of the cost benefit analysis. Ranked seventh is what went well and what did not proceed according to plan with a MS of 4.46; ranked eighth is what lessons were learned about the way the project was developed and implemented with a MS of 4.45; ranked ninth is whether the project could have been planned or implemented better with a MS of 4.36, and ranked tenth is the organisation and implementation of project whether the correct processes were adopted. All form part of the continuous improvement feedback loop and knowledge acquisition and -building.

Respondents were also more neutral on two of the fundamentals:

- Item 9: In retrospect, could the project be planned or implemented better (MS 4.36)? The majority of the respondents that indicated neutral were of the opinion that participants would not be honest enough to gain a true reflection of what transpired as it could jeopardise future appointments, and
- Item 10: Were the correct processes adopted (MS 4.30)? The respondents that remained neutral were of the opinion that procurement processes are dictated by the NDPW and that there is nothing that the PMs can do about it, which is true in a sense. The project-evaluation-feedback-loop would then address departmental procedural shortcomings. Processes in this instance also include the processes followed by the PM, the client, the consultant team as well as the contractor as to how the work was executed.

Table 5.15 illustrates that most of the respondents (95.5%), either agreed (35.7%) or strongly agrees (59.8%) that it would be beneficial for the NDWP to implement a constructive project evaluation programme as reflected in the project evaluation framework while 3.8% remained neutral, 0.2% disagreed and 0.5% were unsure. It is notable that none (0%) of the respondents strongly disagreed.

The reliability of scale relative to the effectiveness that a constructive project evaluation programme would have within the NDPW achieved a Cronbach alpha score of 0.921, which is deemed very good.

Table 5.15: The necessity of implementing constructive project evaluation programmes in the NDPW (n = 119)

Response (%)					
Unsure	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
0.5	0.0	0.2	3.8	35.7	59.8

Question 4 was an open-ended question where the respondents were required to comment in general with regard to implementing a constructive project evaluation programme within the NDPW. Responses include:

- “Project evaluation is viewed to be a systematic and objective assessment of an on-going or completed projects, program, or policy, including its design, implementation, and results”
- “The aim is to determine the relevance and fulfilment of objectives, development efficiency, implementation effectiveness, impact, and sustainability”
- “An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the future decision-making on project implementation”
- “Officials doing evaluation must be well experienced and knowledgeable and not be intimidated by any role-player in terms of assessments”
- “This is the only way to force not only NDPW official to improve their contribution in all facets of project implementation, but also the clients, consultants and contractors. This will ensure that fly-by-night consultants and contractors will be worked out of the system when not performing”
- “The goal should be to provide an on-going source of information that can aid decision-making at various steps along the way without being bias and addressing issues and not the person”
- “Output from evaluations must be used in performance assessments to enforce organisational learning”
- “Evaluations should be culture free. Multi-ethnic evaluation teams increase the chances of successful evaluation”
- “The evaluators must have the strength and authority to challenge the status quo”
- “Evaluation members must have both technical and business skills to implement project evaluations successful while having the mandate to effect change in how projects are implemented”

- “There must be a link between project evaluation and performance reviews and people must be held accountable”
- “Will be very difficult to implement until people see the real benefit thereof and not just as another watch dog on individual performance”
- “This is imperative to the success of any new project is to learn from the past”, and
- “Project evaluation will only succeed if defaulters are held accountable otherwise it will be a waste of time and additional cost to the taxpayer.”

It is evident that implementing a constructive project evaluation within the NDPW is necessary that will induce organisational learning and improve project implementation as a whole.

5.7.4 APPLICABILITY OF PMO / PSO S AND CONSTRUCTIVE PROJECT EVALUATION PROGRAMMES TO OTHER GOVERNMENT PROJECT IMPLEMENTING AGENCIES

The NDPW is only one of a number of government project implementing agencies (GPIAs) and is always associated in the same manner in terms of poor service delivery.

In Question 5, respondents were to indicate on a scale of 1 (strongly disagree / unimportant) to 5 (strongly agree / very important) noting the ‘unsure’ option, as to what extent the respondents agreed that implementing PSOs in other predominant GPIAs such as the Provincial Public Works, Municipalities, Coega and the IDT would also be beneficial.

Table 5.16 indicates the MSs $\geq 4.70 \leq 4.84$ and a mean MS of 4.78, which implies that the establishment of PSOs other government agencies is deemed necessary and important for improving project implementation and service delivery.

Table 5.16: Necessity of establishing PSOs in other government project implementing agencies

Project implementing agency	MS	Rank
Provincial Public Works Department	4.84	1
Municipalities	4.83	2
IDT	4.73	3
Coega	4.70	4
Mean MS	4.78	

It is evident from Table 5.17 that most of the respondents (95.8%) agreed, that PSOs are required in all government project implementing agencies - 13.87% agreed and 81.93% strongly agreed.

Table 5.17: Response rates for determining the necessity to establish PSOs in other government project implementing agencies (n = 119)

Implementing Agent	Response (%)						Rank
	Unsure	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Provincial PWD	0	0	0	1.7	12.6	85.7	1
Municipalities	0.8	0	0	1.7	11.8	85.7	2
IDT	2.5	0	0.0	3.4	15.1	80	3
Coega	2.5	0	0.8	3.4	16.0	77.3	4
Mean	1.5	0	0.2	2.5	13.9	81.9	

The following comments were received regarding the necessity for PSOs within all GPIAs:

- “CDCs at present are acting as agents for a number of provincial departments. Their expertise and quality of documentation, briefing, knowledge is shocking resulting in tenders for professional services being published which contain a two line brief for a project potentially worth hundreds of millions”, and
- “All government project implementing agencies should have PSOs as the majority of the PMs are too inexperienced and procurement methods are suspect.”

The reliability of scale relative to improvement of establishing PSOs within all government project-implementing agencies achieved a Cronbach alpha score of 0.911. The table indicates that the reliability of scale relative to the improvement in project implementation and achieving project success is very good.

The purpose of Question 6 was to determine whether constructive M&E programmes are required in the more predominate GPIAs as GPIAs are always associated in the same manner in terms of poor service delivery. Respondents were required to indicate on a scale of 1 (strongly disagree / unimportant) to 5 (strongly agree / very important) noting the ‘unsure’ option, the extent to which the respondents agreed that constructive project evaluation programmes should be implemented in all the predominate government project implementing agencies such as the Provincial Public Works, Municipalities, Coega and the IDT would also be beneficial.

In terms of importance the mean MS is 4.79, and all four GPIAs achieved MSs > 3.00, which means it is deemed necessary / important as opposed to not necessary / not important. All four GPIA MSs > 4.20 ≤ 5.00, and thus be deemed to be between more than important to very important / very important to implement constructive evaluation that would promote consistency, improve transparency and service delivery.

Ranked first is the Provincial Public Works with a MS of 4.85 followed by the Municipalities with a MS of 4.85. Ranked third is Coega with a MS of 4.75 and fourth is the IDT with a MS of 4.71.

Table 5.18: The necessity for constructive project evaluation programmes in other government project implementing agencies

Project implementing agency	MS	Rank
Provincial PWD	4.85	1
Municipalities	4.85	2
Coega	4.75	3
IDT	4.71	4
Mean MS	4.79	

Table 5.19 illustrates that most of the respondents (95.8%) were of the opinion that constructive project evaluation programmes must be implemented in all government project implementing agencies (12.4% agreed and 83.4% strongly agreed).

Table 5.19: The response rate relative to necessity for constructive project evaluation programmes in other government project implementing agencies

Implementing Agent	Response (%)						Rank
	Unsure	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Municipalities	0.8	0.0	0.0	1.7	10.1	87.4	1
Provincial Public Works Department	0.0	0.0	0.0	1.7	11.8	86.6	2
IDT	2.5	0.0	0.00	3.4	13.5	80.7	3
Coega	2.5	0.0	0.8	3.4	14.3	80.0	4
Mean	1.5	0.0	0.2	2.5	12.4	83.4	

Most of the respondents indicated during interviews that constructive project evaluation programmes must be implemented in all government project implementing agencies. Comments include, *inter alia*:

- “Project evaluation programmes are definitely required especially within the other government implementing agencies to mitigate fraud and corruption. Also to enforce transparency and just tender processes for both consultant services and construction”
- “Stringent project evaluation programmes should form part of all projects of all government project implementing agencies in order to develop skills and systems, and to mitigate fraud and corruption”, and
- “I have selected the ‘Strongly Agree’ on municipalities and IDT. This is because the experience gained from working with these institutions suggests that an improvement is required in the way projects are managed. Entities such as the NDPW and Coega have already made a giant step in ensuring a system for managing their projects. Establishing PSOs and implementing constructive project evaluation programmes would add more value to entities such as the municipalities and the IDT, this because of the perceived notion that an improvement is also required in these institutions.”

The reliability of scale relative to the effectiveness that a constructive project evaluation programme would have within other government project implementing agencies achieved a Cronbach alpha score of 0.921. The table indicates that the reliability of scale relative to the improvement in project implementation by introducing a constructive project evaluation programme is very good.

5.8 CONCLUSIONS

As the NDPW continues to struggle to achieve both project and programme success, the Departmental PMO must be transformed into a results orientated entity with the aid of establishing PSOs within the regional offices. The PSOs offer not only the needed day-to-day management of projects, but also to provide the strategic guidance, technical expertise and the focus required to achieve lasting results.

Areas of intervention by the PSOs are presented in Figure 5.1 and the key roles and responsibilities of the PMO and PSOs in Figure 5.2. Figure 5.4 illustrates the continuous improvement model that underpins the impetus that the PSOs will provide toward improving project implementation throughout the project life cycle of the NDPW in Figure 5.5.

The PSO, as a system model (Figure 5.5), if implemented in conjunction with the evaluation of projects in accordance with the project evaluation framework (Section 5.6.4) will reinforce the areas of the PSO's intervention within the NDPW's project implementation cycle (Figure 5.1). This will ensure that organisational capabilities are developed, fostered and portrayed (Table 5.4) to become a project competent organisation in accordance with the project management maturity model (Figure 5.6).

It was also ascertained in this chapter that it would be beneficial to establish PSOs and implement constructive project evaluation programmes in other GPIAs, *inter-alia*, the Provincial Public Works, Municipalities, Coega and the IDT in order to become more effective, efficient, and accountable project implementing agencies.

Establishing PSOs within the regional offices provides an ideal opportunity to improve service delivery through effective and efficient project implementation and building project competent organisations throughout the government.

Chapter 6, which follows, presents the summary, recommendations and conclusions arising from the research.

CHAPTER 6:

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

6.1 INTRODUCTION

Chapter 4 presented the empirical findings. Chapter 5 elaborated on the PSO model and the implementation thereof, and the need for a constructive project evaluation programme within the NDPW and other government project implementing agencies. In this chapter, the research findings are summarised, and recommendations made on how to improve the project implementation process and to improve the current level of project success, the attainment of the potential benefits of the study, and recommendations for further research.

6.2 SUMMARY OF THE SALIENT FINDINGS

The main problem identified in this study was to ascertain whether a system approach to project implementation within the public sector would improve service delivery and the project success rates.

The rationale behind the study was to address the continued decline in service delivery and poor project success rates within the NDPW of the South African public sector regardless of the huge budget for training and development in all government ministries and departments. It is evident from the theoretical review that for training and development to be effective, it must be systematic, and proper evaluation techniques used in order to improve individual, team, and organisational performance.

While the major part of this research addressed the systemic approach to project implementation throughout the project life cycle, it is important to note that the NDPW will only become a project competent organisation by establishing PSOs within its regional offices to aid with the project implementation processes and realignment of policies. The implementation of a constructive project evaluation programme and effecting solutions is a systematic training process that requires a grave mind-set change by all public servants. While previous research within the NDPW focused on current competencies and the evaluation of training and development, a need exists to investigate and formulate strategies for establishing PSOs and implementing constructive project evaluation programmes in order to address poor quality service delivery and the continued decline in productivity levels in the public service sector.

The following summary in relation to the sub-problems identified presents the salient findings of the research:

S-P1: To what degree do clients contribute to project success or failure?

Client representatives play a major role in achieving project success or failure. Table 4.2.1 reflects inadequate client representation and contribution throughout the project lifecycle, which is a major contributing factor to the poor project success rate of the NDPW.

It is evident that client representatives attending briefing meetings are not well informed in terms of their own real accommodation needs or required standards (Table 4.2.11). The clients' contribution toward achieving project success is found to be inadequate compared to the level of importance of the impact it has on achieving project success.

Clients are of the opinion that the NDPW PMs should be aware of their needs and requirements in the absence of appropriate client representation. Table 4.2.12 indicates that client representatives very often rely on the NDPW PMs' technical expertise and knowledge of client needs to facilitate project planning and implementation with the appointed consultants.

Interviews revealed the fact that inappropriate client representation at project briefings and planning sessions contribute to project failure as the client representatives are not capable of expressing their real needs and expectations which leads to dissatisfaction. The project is thus doomed to fail when there is insufficient client contribution in terms of accommodation requirements and even more, when the PM is not familiar with the client's actual needs and standards.

S-P2: Are project objectives clearly defined for assessing the level of project success?

Project objectives are not clearly defined at the project inception stage. Table 4.2.2 illustrates the various elements and objectives of the project brief which often changes from the project brief to project completion, which negatively impact on the perceived level of project success and client satisfaction. Factors that drive changes to the construction brief are often present on the NDPW's projects that have a moderate to severe impact on achieving project success and client satisfaction (Table 4.2.4). Questions 2 and 4 affirmed that project objectives are not adequately defined relative to its importance at the time of the project briefing. The clients' inadequate

knowledge of the key elements of the project brief that constitute their needs, negatively impacts on the quality of the project brief as project objectives cannot be clearly defined.

S-P3: Are project briefings adequate to limit changes to scope, time, cost, and quality?

The current level of project briefings is deemed to be inadequate in relation to its level of importance (Table 4.2.3). Table 4.2.5 indicates that inadequate project briefs contribute substantially to the perceived level of project failure and client dissatisfaction. Project briefings of the NDPW need to be improved in terms of addressing the key elements that form part of the project brief in order to mitigate cost, scope, time, and quality slippages throughout the project life cycle (Table 4.2.7).

Questions 3, 5 and 6 established that project briefings of the NDPW are generally inadequate which must be improved in order improve the perceived level of project success and client satisfaction.

S-P4: Do the PMs' capabilities match the actual post requirements?

The PM's capabilities often do not match what is required on the specific projects (Table 4.2.16). The majority of the PMs of the NDPW portray PM traits and qualities adequately with average capabilities (Table 4.2.17). However, it is notable in Figure 4.2.1 that the 'gap' between their level of performance and level of importance implies that majority of the PMs of the NDPW do not portray the qualities to the level that a PM should portray relative to its importance.

Table 4.2.19 and Figure 4.2.2 illustrate that the majority of the PMs of the NDPW do not take the time to develop and foster the skills required to be more successful as PMs relative to its level of importance.

Table 4.2.21 and Figure 4.2.3 indicate that PMs have not developed key traits of good managers adequately with average capabilities relative to its importance to manage projects successfully.

The extent to which PMs have mastered key project management traits is deemed to be inadequate with basic capabilities, relative to its importance to manage projects successfully as portrayed in Table 4.2.22. Figure 4.2.4 illustrates the 'gap' between their level of performance

and the level of importance which implies that majority of the PMs of the NDPW have not developed the managerial skills required relative to its importance to be more successful as PMs.

Questions 13, 14, 15, 16 and 17 avowed that the NDPW's PMs' capabilities and performance do not match the actual post requirements as it is deemed to be predominantly either inadequate or adequate with average capabilities, while the post requirements require that a PM's capabilities should be more than adequate / mastered.

S-P5: Has the NDPW adopted project management as a corporate methodology?

Table 4.2.10 illustrates that both the NDPW and the client is not successful in fulfilling their respective responsibilities as the most common causes of project failure are often present relative to the importance to address such causes, all of which have a high impact on achieving project success and client satisfaction thus resulting in project failure.

Figure 4.4.1, under section 4.4 illustrates that most of the respondents (97.4%) were of the opinion that the root cause for the vast amount of project failures within the NDPW is attributed to both the system and the people. There appears to be consensus that there should be stringent business processes to deter fraud, but it should be streamlined to reduce cost and time slippages and wasting valuable human resources. Comments received eluded to the fact that it is the people within the system that makes the system complicated and unmanageable. More specifically in terms of the employees' qualifications, experience, competencies and more importantly, general attitude, and commitment to rendering as service.

The most common causes of project failure in terms of organisational readiness and support are often present on NDPW projects (Table 4.2.23).

Table 4.2.29 illustrates that the current maturity level of the NDPW as a project organisation is at best a level 2 although elements of levels 3 and 4 may be present, but not fully adopted and efficient. The NDPW's ability to address issues relating to cultural differences relative to its importance can be deemed to be completely inadequate to inadequate relative to its importance as reflected in Table 4.2.30 and Figure 4.2.6.

It is evident from the response to questions 8, 18, 19, 20, 26 and 27 that the NDPW has not fully adopted project management as its corporate methodology, and can therefore not be considered a project competent organisation.

S-P6: How often are PMs mismatched to projects and what are the consequences?

Common causes of project management failure are often present on NDPW projects (Table 4.2.9), which can be attributed to the inexperience and inabilities of the designated PMs.

Table 4.2.13 illustrates that generally the PM's capabilities often match what is required on the specific projects (mean MS 3.17 and SD 0.82). It is however notable that the PMs' rating is the highest (MS = 3.73) while the key NDPW staff achieved the lowest mean MS of 2.54, followed by the contractors (2.90) and the consultants (2.97). Given the fact that the key NDPW staff that are directly involved with the budgeting, programming, cash flows, and administers extending financial tender dates, extension of time claims and variation orders that gives them total insight as to what is actually happening on the projects. Interviews revealed that PMs are mismatched more often than shown in the survey as affirmed by the fact that both the contractors and the consultants also achieved mean MSs < 3.00 being 2.90 and 2.97 respectively.

Table 4.2.14 confirms that PMs are often mismatched (mean MS = 2.97) even though it is deemed important (mean MS = 4.41) to match PMs with projects requirements to achieve project success.

It is notable from Questions 7 and 12 that PMs are mismatched more often than indicated in question 11, which negatively impact on achieving project success and client satisfaction.

S-P7 Will Construction Industry Development Board (cidb) registration of contractors ensure improved performance and increase the current project success rates?

Table 4.4.3 from Question 25 illustrates that the most of the respondents (96.6%) indicated that appointing cidb registered contractors will not necessarily ensure improved performance and increase project success rates. The respondents argued that this is mainly due to the current method of grading contractors whereby contractors are only screened what is stated in the application forms and not by authenticated reports and proof of past and present performance and achievements which result in contractors obtaining a grading higher than their actual capabilities.

S-P8: To what extent are projects being monitored, reviewed and evaluated effectively to induce organisational learning?

Table 4.2.25 illustrates that all eight (100%) of the key performance areas / activities are seldom measured effectively relative to its necessity to facilitate organisational learning and growth.

It is evident from Table 4.2.26 that all eight (100%) of the identified purposes for evaluating projects are seldom evaluated effectively within the NDPW relative to its necessity and importance.

Table 4.2.31 illustrates that the level of efficiency in which the NDPW assesses key elements and activities throughout the project implementation lifecycle relative to its importance is deemed to vary from non-existent and completely inadequate to inadequate with basic capabilities.

Projects within the NDPW are generally only evaluated in terms of progress and expenditure on a monthly basis. All other contributing factors to project success are not assessed or taken into account and lessons learnt are seldom heeded.

It is essential to appraise projects more thoroughly to determine whether the PMs are actually managing their projects and driving the project implementation process. The current level of effectiveness within the NDPW is considered inadequate. This is attributable to the fact that projects as well as the organisation's performance is predominately only on progress and expenditure. Questions 21, 22 and 28 have confirmed that projects and the NDPW is not being assessed monitored, reviewed and evaluated effectively to induce organisational learning and growth.

S-P9: Will project success rates improve by establishing Project Management Offices (PMOs) within the regional offices thereby assist the NDPW to become a project competent organisation?

Table 4.2.27 illustrates that the current PMO maturity level of the NDPW is at best a level 2, although elements of level 3 such as the standardised documentation is available there are still a number of shortcomings e.g. out-dated forms, supporting documents not updated and available timeously, and changes are made to processes without being tested thereby creating more delays and problems.

It is notable from Table 4.2.28 that the current level of performance of the NDPW PMO on all eight (100%) of the identified functions of the PMO are deemed to be seldom performed and ineffective, relative to its importance.

The deviance between the current level of the PMO's performance, and the necessity / importance to establish PSOs is notable from Figure 4.2.5. The respective ratings indicate that 6.7% of the respondents view the NDPW's PMO to be non-existent, 38.1% to be ineffective, 49.6% to be reactive in nature, 4.3% effective and 1.3% to be very effective and efficient. Most of the respondents (95.2%) agreed that PSOs should be established in the regional offices of the NDPW to develop the NDPW into a project competent organisation, and improve service delivery, both internally and externally (41.5% agreed and 53.7% strongly agreed).

Questions 23 and 24 affirm the real need for PSOs within the regional offices that would ultimately aid the NDPW to become a project competent organisation.

6.3 RECOMMENDATIONS FOR IMPROVEMENT

This study can be considered as a baseline study determining the current organisational performance levels in terms of implementing projects within the NDPW, as well as other government project implementing agencies.

The following recommendations emanate from the results of this study:

- The NDPW must consistently apply strategies for the evaluation and implementation of training and development initiatives that must be reflected in the organisation's training policy. Training and development must be seen as crucial components of instilling efficiency and effectiveness in order for the NDPW to become a learning and competent organisation;
- The ineffective performance management system must be realigned to induce self-study and organisational learning that would also enforce accountability within the performance management system that is aimed at improving individual, divisional and organisational performance;
- Rather than recreating what already exists, efforts should be concentrated on re-evaluating the usefulness of existing processes, making revisions where appropriate, eliminating redundancy, and improving communication and access to the information throughout the

organisation. Project implementation is a dynamic system that relies on continual improvement of management processes and matures over years of implementation. Organisations, such as the NDPW, who build on existing organisational processes and procedures, are more successful than those who create all new procedures. Cognisance is taken of the fact that the NDPW already has in place most of the elements required for successful project implementation. It now requires a mind-set-change to become proactive, realign policies and procedures with the full commitment from top management, and start delivering;

- Clients must be requested to draft a policy and standards document outlining their accommodation needs and standards, which can be used by the clients themselves as a reference, and by the NDPW as a guide when briefing consultants on projects. The client must also then distinguish between planned maintenance i.e. - repairs and renovations standards, and capital works, i.e. new construction standards. The NDPW head office key account management must facilitate the integration of the clients' guidelines with the NDPW's policies and guide lines;
- Senior PMs' roles and responsibilities must be defined to include either the supervision and management of three to four subordinate PMs, or the management of their own strategic and large projects. Senior PMs cannot successfully execute their roles and responsibilities while being part of management, being a supervisor and have to manage their own major projects;
- The procurement division throughout the NDPW must be revitalised starting at the head office, as this is one of the major impediments to implementing projects due to a tedious procurement process, and the divisions' inabilities and incapacity to perform;
- PSOs must be established in all regional offices by making use of existing employees in current posts. Selection of the PMO / PSO team members is pivotal to the success of the project implementation program. Team members should be selected for their organisational knowledge, their excellent interpersonal, organisational, and communication skills, and strong project management ability. Regional offices that do not have sufficient staff must be assisted by another regional office. The PSOs will function in an advisory capacity, developing the project plan, enlisting buy-in from employees, collecting information and disseminating it across the organisation via the PMO in Head Office, and providing guidance and leadership as the requirements are being addressed by employees throughout the supply chain of project implementation. All PMO / PSO members need in-depth training to instil a clear understanding of the intent of the PMO / PSO functions and how each of the elements can be integrated with the current programs;

- All PMs and procurement staff must write an annual compliance exam to establish their knowledge base that will entice them to stay abreast with new developments within project management in terms of methodologies as well as new directives and policies pertaining to project management and procuring services. This will also instil self-study, growth and development that would lead to professional registration and more competent project and procurement divisions, and
- It is recommended that a PSO implementation committee be established in each regional office where all departments of the supply chain of project implementation should be represented for an interim period until such time that the PSOs are fully operational and functional. The chairperson, i.e. the PSO representative, must be delegated the necessary authority to implement the PSO recommendations once approved and / or instructed by the PMO in head office, and in fact the entire committee must have authority as well as responsibility. The PSO implementation committee will drive the process of creating awareness, understanding and involvement of other employees in the PSO activities that should extend across the entire organisation and be recognised as an organisational priority. Involving employees in the PSO activities from the very beginning of the process builds understanding, involvement and commitment for the PSO and that would help to institutionalise the PSO into organisational culture. Employees know their operations best and will be implementing the programs, measuring the progress, and ultimately achieving the goals. One of the central principles of the PSO approach is that successful project implementation is the responsibility of every employee in the organisation and not only that of the PM, and
- A user-friendly project management procedural guide must be developed and maintained as a manual for PMs and anyone within the supply chain. The manual should also address and simplify the nine key fundamentals of project management as per the PMBOK relative to the NDPW that include: managing change / variation orders; communication; cost; integration; procurement; risk; scope; social objectives; time, and quality. The manual must also include the various traits that both the organisation and the individual PMs should develop in order to manage projects more successfully.

Employees will come to realise and take pride in the active role they play in the organisation's efforts to improve service delivery. The PSO awareness will take time to filter throughout the organisation and for employees to become comfortable with new ideas and responsibilities. Employees who are involved in the PSO process and who contribute to the development of

procedures and work instructions in their respective departments would be more willing to accept organisational changes inherent in the PSO implementation.

Managers who expect PSO involvement across the entire organisation and who acknowledge employee contributions will have good success in achieving this culture change. Regular communication about benefits and successes of the PSO is also important to building motivation and commitment. Employees will take their cue from management whose job it is to develop enthusiasm and commitment for improving project implementation with the NDPW.

The first objectives of the PMO / PSOs are to research and produce the following documents specifically for the NDPW:

- Revise the project management procedure manual that would include project management standards, the respective roles and responsibilities of all stakeholders and role players, and PM development;
- Document development requirements and management process manual for each client that would include the establishment of project objectives;
- Formulate a project programme and technical review guide in conjunction with the clients;
- Develop a project evaluation manual derived from the evaluation framework that addresses the measurement / assessment of the level of project success and analysis thereof;
- Configure a change management process manual specifically for variations in project scope;
- Document a risk management process manual that would include the approach to risk management, principles for effective risk management and best practices;
- Refine guidelines, delegations and policies;
- Facilitate organisational taxonomy – Software development and operational support including development and installation of useful project management tools as well as a project planning tool and integrated master plan (IMP);
- Develop integrated master schedule (IMS) guidelines;
- Develop an integrated project baseline review practice guide;
- Document a preliminary design review practice guide, and
- Configure a critical design review practice guide.

6.4 CLOSING THE GAP BETWEEN TECHNICAL AND BUSINESS EXPERTISE

The NDPW needs to close the gap between technical and business expertise. According to the ESI (2007: 3-5), the gap between the technical and business expertise of successful PMs closes

as training efforts focus on the development of business acumen, critical thinking and problem solving, and interpersonal communication skills.

These professionals will determine the NDPW's future. As such, their thinking not only needs to change, but also needs continuous shifting. The following different types of thinking must be adopted, according to the ESI (2007: 3-5), and must be able to determine which type is appropriate and how to apply each in various situations:

- Strategic thinking is the way in which people consider, assess, view and create the future for themselves and the organisation. Strategic-thinking skills are necessary for planning and development in the long-term;
- Tactical thinking is an active process where the individual must consider all the options and tactics available in order to make a short-term decision. Included in tactical thinking are the operational details;
- Analytical thinking is thinking similarly to a detective that uses the process of problem solving: identify the problem, formulate hypotheses, establish the facts, analyse findings, establish the cause, and provide solutions;
- Critical thinking is a disciplined approach of conceptualising, applying, analysing, synthesising and evaluating all available information to find and determine the truth and what is correct, valid, real or the best choice;
- System thinking focuses on how one item interacts with other pieces of a system by gaining an understanding of the different interactions, and
- System thinking works by expanding its view to take into account larger and larger numbers of interactions as an issue is studied. It facilitates seeing how activities are related and dependent on each other.

By applying appropriate types of thinking at critical junctures, the PMs and the supply chain staff will make better decisions and realise improved project results.

6.5 ATTAINMENT OF THE RESEARCH– AND SUB-OBJECTIVES, AND THE POTENTIAL BENEFITS OF THE STUDY

The main objective of this study is to explore and gain insight as to how the NDPW can improve service delivery through a more efficient project implementation methodology by identifying enablers, barriers and precursors to the improvement of service delivery.

The study also aimed to formulate a framework for evaluating projects from a system thinking perspective as a platform for constructive knowledge acquisition and generating information that is used for future decision-making and strategic planning.

All three of the sub-objectives from section 1.7 were achieved:

- The first sub-objective was to understand project management, the role of all the stakeholders and the project implementation cycle within the NDPW from a system thinking perspective to facilitate conceptual understanding of project implementation within the NDPW;
- The second sub-objective was to design a framework that models specific system thinking methodologies and archetypes that would both improve project implementation within the NDPW and organisational learning, and
- The third sub-objective was to develop a framework for evaluating projects that would ultimately institutionalise project management methodologies as the corporate methodology, which will cultivate a situation where project success is the norm and consequently, enable project management organisations and in particular the NDPW, to retain their clients, contractors and other service providers. From this, benchmarking projects could serve as a guide of improved performance to others within the organisation and construction industry.

Section 1.11 outlines the benefits of the research findings anticipated at the onset. The extent to which these benefits have been attained are highlighted in the following sections.

6.5.1 BENEFITS FOR THE CLIENTS:

Benefits for the clients include:

- A thorough understanding of the project implementation process within the NDPW;
- Clear understanding of the important role the client plays in achieving project success;
- Improvement in the briefing process. This could guide prospective clients in articulating comprehensively, the applicable needs of peculiar interest both latent and stated needs and requirements. Also the establishment of the priorities sought by the client groups could assist a client in benchmarking his or her own priorities within the context of the project;
- Identification of the causes of client dissatisfaction;
- Clearly formulated project objectives and joint assessment of the successfulness of the project, and

- Improved client relations.

6.5.2 BENEFITS FOR THE CONSULTANTS:

Benefits for the consultants include:

- Comprehensive client briefing and understanding client needs. A comprehensive listing of the latent and stated needs and requirements of the various client groups should be made. Knowledge of these needs and requirements could guide the professionals at the upstream briefing stage to explore how clients prioritise these needs and requirements;
- Identification of hidden client needs and objectives: The study has identified the existence of latent client needs and objectives and stated requirements. It is argued that during briefing, clients state their perceived solutions to realising the latent needs. Due to the irrational decision making approaches adopted by clients in arriving at these solutions, significant divergence could exist between the perceived solutions and client real needs. Professionals could then probe beyond clients' superficial presentations to identify the hidden needs and objectives, which ironically is the criterion for assessing satisfaction;
- Easy access to the PSO with the necessary expertise to reduce turnaround time in decision-making on project matters;
- The appointed consultants' capabilities will match the complexity of the project through the review and integration of procurement policies and strategies;
- Improved project planning as there will be sufficient time to do proper planning and obtain approval of sketch plans well before the financial tender date;
- Less creep in cost, scope, time, quality, occupational H&S or any other set objectives, and
- Projects will be completed and closed out sooner.

6.5.3 BENEFITS FOR THE CONTRACTORS:

Benefits for the contractors include:

- Improved scope definition emanating from proper project briefings;
- Comprehensive bid documentation;
- Reduced cost, scope, time and quality creep on projects emanating from proper planning;
- Reinstatement of construction standards to all projects, and
- Projects will be completed and closed sooner.

6.5.4 BENEFITS FOR THE NDPW:

Benefits for the NDPW as an organisation include:

- Complete understanding of the project implementation process and its current impediments;
- Total buy-in of project objectives from all stakeholders once formulated;
- Improved construction programme management and budget forecasting;
- Decreased project implementation lead time;
- Decreased project implementation cycle;
- PMs will be enabled and capacitated;
- Projects will be allocated to suitably qualified and experienced PMs;
- Project management will become the corporate methodology resulting in increased organisational support to the PMs;
- Improved client relations and satisfaction;
- Greater innovation in business processes;
- Strengthened relations and ethical practices;
- Improved communication and use of knowledge;
- Retain clients and possible expansion into private sector;
- Improved corporate governance and corporate citizenship;
- Reduced gap between private sector and public sector practices;
- Increased action learning, knowledge management and – sharing;
- Identified tangible issues that will enable the NDPW to ensure sustainability;
- Identified leverage points for improving service delivery, and
- Elimination of adverse barriers within the project implementation processes of the NDPW.

6.5.5 BENEFITS FOR THE CONSTRUCTION INDUSTRY:

Benefits for the construction industry include:

- Improved construction programmes will result in synchronised government expenditure;
- Improved control and forecasting of human and financial resources required for the industry;
- Satisfied clients and service providers will engender synergy within the industry itself;
- Increased BEE and development of emerging contractors;
- Improved skills transfer;
- Improved project implementation process;

- Achieving governmental socio economic objectives;
- Improved H&S compliance on construction sites, and
- NDPW project implementation practices aligned with the private sector.

6.5.6 GENERIC BENEFITS:

In generic terms, this study of project implementation within the NDPW also yielded the development of:

- Benchmarking performance levels of the NDPW as an organisation, the PMs, supply chain staff, clients, professionals and the contractors that will identify areas for improvement and future implementation;
- A continuous improvement framework;
- A model for the implementation of PSOs;
- An organisational maturity model;
- A capability framework for developing organisational abilities, and
- A framework for project evaluation.

6.6 RECOMMENDATIONS FOR FURTHER RESEARCH

Key to the organisational development of the NDPW would be to research both the real level of organisational maturity and the ideal organisational maturity levels that the NDPW should aspire to. Other areas for future research that are major contributing factors to successful project implementation include:

- The impact of fraud and corruption on service delivery of the NDPW;
- The appointment of consultants-whether it should take place via a roster system or open tender procedure, as both methods have numerous advantages and disadvantages. This study should also investigate the application of scoring functionality, its complexity and justness;
- The bid adjudication process of contractors and its intricacies, and the extent to which only one or two elements take preferences above others that do influence the awarding of bids and ultimately the level of project success achieved. This study should also address the complexities in conducting risk assessments on service providers and its perceived subjectivity;
- Another area of concern lies within the supply chain of service delivery and project implementation, is contribution of the support staff. This include their influence and the real

impact of their lack of capacity, competencies, and inability to provide constructive and proactive participation, poor policy integration, inadequate subject knowledge, and direction in procuring the services of both consultants and contractors that has a major impact on project success, and

- An investigation into administering the NDPW as a business entity based on private sector practices.

6.7 CONCLUSIONS

It is important to appreciate and acknowledge that improvement is not a once-off event such as attending a training course or an academy. Rather it is about long-term planning and growth. That is how an organisation should seek to improve its capacity. This however, is not done within the public sector at large, or the NDPW for that matter. Personal development plans are compiled every year for each employee, but very little if anything at all is done to action the training. More and more responsibilities are allocated to managers for doing in service training and mentoring, but are unable due to various other responsibilities and priorities. Currently, senior PMs are managers of subordinates while also being production units themselves whereby the senior PMs manage their own projects with added managerial responsibilities, which is not feasible, giving preference to one element over the other resulting in poor management and implementation of projects.

“In the second decade of South Africa’s post-apartheid constitutional democracy, growing concern has been expressed about the government’s ability to deliver public services that people yearn for and are entitled to – and that they have, since 2004, taken the streets of demand” Managa (2012: 1). The public service is continually undermining itself by telling the public something that the public knows better. Managa (2012: 3) states that “Among the major challenges facing local government are acute problems of institutional capacity, mismanagement of funds, high levels of corruption and a lack of public participation are the key challenges hampering performance.” Public sector managers and politicians often speak about service delivery as if they are the judge of how good these services are. Commonly officials boast about ‘quality service delivery’ whereas the citizens know better, their experience is very different from what officials are advocating. As a result, according to Dr. Iraj Aberian from Pan African Capital Holdings (2007: 1), the government of the day is on the verge of losing the trust that has been built up with the public as expectations have been shattered. Importantly, the public service

has a multi-layered client base with varied expectations and the public service has to build and sustain trust across these layers, which in itself is very difficult.

Although structures are well defined within the NDPW, there is hardly any coordination and policy integration. Delegations and guidelines that are either impractical, or impossible to implement, are enforced, which hampers service delivery even further. Usually when there is a good operation, it is because of the efforts of one or two individuals. Everything appears to be done on an ad hoc basis not on a systemic, organised and integrated basis. High-ranking government officials are always talking about best practices. Continuously the Director General or a Minister goes overseas to learn about best practices, but still perform 'old practices' and in some instances even protect same. The system of appointing Director-Generals short-term as their contracts are limited to five years. If the Minister goes, then the DG goes with him or her. Who is going to take care of the long-term needs of government departments such as the NDPW? This is affirmed by the fact that the majority of the head offices of all government departments are in total disarray that can be ascribed to a lack of continuity and direction.

In many cases, senior managers and executives are relying on data and reports that fail to capture the complexity of the system and the experience of those working within it. To lead an organisation that constantly strives to improve, the chief executives must acquaint themselves with the processes, how it should be done, and act on decisions taken at high level meetings. To overcome such difficulties, decision makers should develop a shared understanding of the project implementation process as public-sector managers do not always see themselves as supervising or managing an 'operation' and it is unusual for a single person to be responsible for an entire process. In addition, top-down targets tend to focus on a single part of the operation, to the detriment of the process as a whole.

Poor project performance has become a way of life within the public sector. Failure statistics have ceased to shock public servants. Most citizens come to expect project failure, along with a loss of money, time and functionality as a given. Hofacker *et al.* (2012: 1-3) argue that the objective of a procurement system should be to increase value, to improve the parameters of productivity, quality and performance in government offices, thereby reducing the processing time. Another important aim is the reduction of value-loss, which seems to be more difficult, since it demands the establishment of measures to determine the 'gap' between the estimated potential value and the value eventually achieved.

As a project-implementing agency on behalf of other national government departments, the NDPW has a damaged reputation to repair and a branding problem to solve, hence the necessity to adopt a system approach to project implementation. A system approach requires a fundamental change in how the organisation addresses its operational issues and culture.

The most common remark heard is: “That’s not my job – it is someone else’s responsibility. It is not in my job description.” There’s a lack of awareness or understanding about the benefits that project management principles and the PMO has brought to the NDPW, and the value it, together with PSOs, will bring in the future. All government entities can realise many more benefits than just being compliant, by broadening the performance indicators that are being used to measure actual successes.

Overcoming the ‘fire-fighting mentality’ will remain challenging. Leaders and management must become more visible and accountable that will facilitate ownership of processes and re-instil pride for a job well done. The NDPW as an organisation needs to adopt a positive and proactive attitude while setting aside office politics. The NDPW needs to champion a long-term vision of skills development, and needs to explore the implementation of sound practices, not just best practices, by establishing PSOs in the regional offices and implementing constructive project evaluation programmes. It is acknowledged that improvement will not happen overnight, but for the PMO / PSO to be successful and for the NDPW to warrant its future existence will require senior management to be educated in the value of the PMO / PSOs and the use of constructive project evaluation programmes in conjunction with sound knowledge management. The whole process of performance assessment is nullified, unless action is taken on both the performance assessment information and project evaluation data. Senior management should ‘walk their talk’, and every public servant for that matter or find alternative employment as the NDPW has now come to a crossroad where its future existence hangs in the balance.

Gaining commitment from top management and the Minister of Public Works to establish PSOs within the regional offices and implementing constructive project evaluation programmes is vital for organisational improvement and growth, from which the NDPW and other government agencies will mature into project competent organisations where project success will be the norm, and both internal and external service delivery will become a reality.

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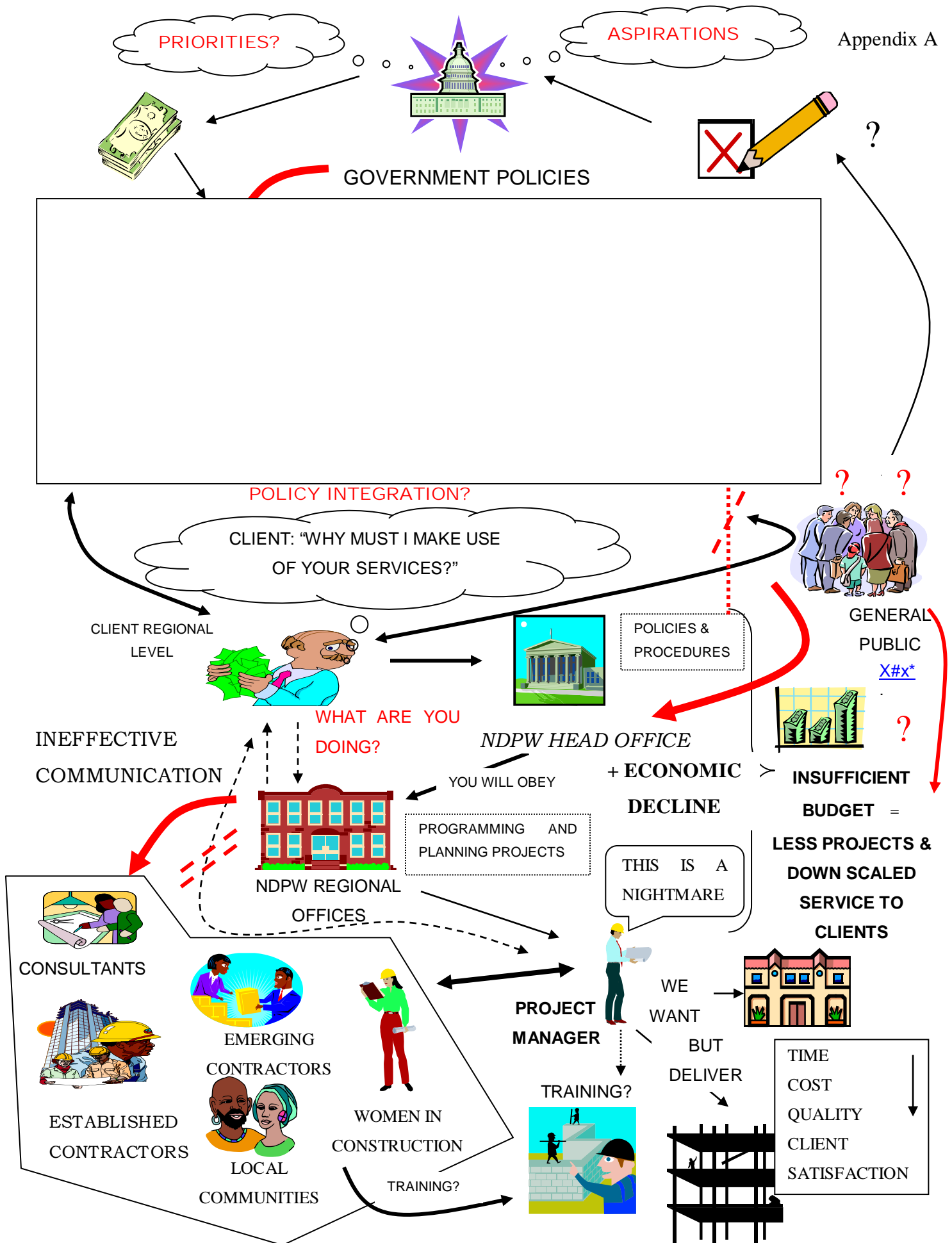
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Rich picture illustrating the NDPW's current problem situation

Attention: The Manager

1 August 2011

Dear Madam / Sir

Re: A Systems Approach to Project Implementation within the Public Sector

The enclosed survey 'A Systems Approach to Project Implementation within the Public Sector' constitutes part of a study to determine whether in terms of National Department Public Works projects the:

1. Project objectives are clearly defined for assessing the level of project success?
2. To what extent do clients contribute to project success or failure?
3. Are the current project managers' capabilities matched with the actual post requirements?
4. Are projects being monitored, reviewed and evaluated effectively to induce organisational learning?
5. Has NPDW fully adopted 'Project Management' as a corporate methodology?
6. Will NDPW's service delivery improve by establishing Project Management Offices (PMO) / Project Support Office (PSO) within the regional offices?
7. Will Construction Industry Development Board (CIDB) registration of contractors ensure improved performance and increase the current project success rates?

In addressing this real complex scenario the sample stratum consists of NDPW clients, general contractor members of the East Cape MBA and CIDB, consultants, key NDPW personnel and departmental project managers. Your response is therefore critical to ensure the success of the survey.

Please note that your anonymity is assured, and that the questionnaire should **not take more than 25 minutes** to complete. We would be grateful if you would endeavour to complete the questionnaire and return it by **27 August 2011** by return e-mail to een.greyling@dpw.gov.za or per facsimile to 086 532 8504 (Preferably per e-mail).

Should you have any queries please do not hesitate to contact me at (041) 408 2000, 082 804 2251 or per e-mail.

Thanking you in anticipation of your response.



Een Greyling
Researcher



John Smallwood, PhD (Construction Management)
Professor, and Head, Dept. of Construction Management
Program Director, MSc (Built Environment) Program, Supervisor

Project-Competent Organisation Questionnaire: Part 1

Appendix C Part 1

Respondents: Clients, Consultants, Contractors and key NDPW staff and Project Managers

Date completed: _____

Respondent Code: _____

1 Please indicate your involvement in NDPW projects.

Client	<input type="text"/>	Consultant	<input type="text"/>	Key NDPW Staff	<input type="text"/>
Head Office	<input type="text"/>	Architect	<input type="text"/>	KAM	<input type="text"/>
Provincial office	<input type="text"/>	Quantity Surveyor	<input type="text"/>	PBA	<input type="text"/>
End User	<input type="text"/>	Structural Engineer	<input type="text"/>	SCM	<input type="text"/>
		Civil Engineer	<input type="text"/>	Leasing	<input type="text"/>
		Electrical Engineer	<input type="text"/>	Management	<input type="text"/>
		Mechanical Engineer	<input type="text"/>		
Contractor	<input type="text"/>	Departmental PM	<input type="text"/>		
Main Contractor	<input type="text"/>	PM	<input type="text"/>	Head office	<input type="text"/>
Subcontractor	<input type="text"/>	Snr. PM	<input type="text"/>	Regional Office	<input type="text"/>

2 Please indicate your qualifications in the project management / construction environment:

Please mark with an "X"

None	
Trade Certificate	
Certificate in Project Management	
Diploma in Project Management	
Degree + in Project Management	
National Diploma in profession	
Degree in profession	
Honours degree in profession	
Masters degree in profession	
PHD in profession	

- 3 Please indicate the number of years experience you have in the project management / construction environment:**
- 4 Please indicate the number of NDPW projects you have been involved in:**
- 5 Please indicate the average Rand Value (Million) of NDPW projects you have been involved in:**

USE THE "TAB" KEY TO MOVE BETWEEN CELLS WHILST ENTERING RATINGS

Please go to next sheet for Part 2

Project-Competent Organisation Questionnaire: Part 2

Appendix C Part 2

Respondent Code:

Question 1: Do clients know what their accommodation requirements and needs are at project inception (briefing) with regards to the following aspects?

LEVEL OF CLIENT REPRESENTATIVE'S AND PROJECT MANAGER'S PERFORMANCE
1 - Not informed
2 - Partially informed
3 - Informed
4 - Advanced knowledge
5 - In depth knowledge

LEVEL OF IMPORTANCE TO ESTABLISH PROJECT OBJECTIVES
1 - Unimportant
2 - Of little importance
3 - Moderately Important
4 - Important
5 - Very Important

		LEVEL OF PERFORMANCE BY CLIENT	LEVEL OF PERFORMANCE BY PM	LEVEL OF IMPORTANCE
	CRITERIA	1 - 5	1 - 5	1 - 5
1	Real accommodation needs			
2	Functionality of the building (facilities and operational flow within the building)			
3	Performance requirements (standards and "Green Building" technology)			
4	Budget limit			
5	Time schedules and required delivery date			
6	Procurement method & processes			
7	Health and safety requirements			
8	Legislative requirements (Municipal by-laws, Building regulations, etc.)			
9	Use of local suppliers, labour and sub-contractors			
10	Training programs on projects (Skills transfer via EPWP / NYS programmes)			

Question 2: To what extent do the following aspects of the project change from project inception (briefing) to project closeout, and how does it impact on the perceived level of project success and client satisfaction.

FREQUENCY OF OCCURRENCE		LEVEL OF IMPACT ON PERCEIVED LEVEL OF PROJECT SUCCESS AND CLIENT SATISFACTION		FREQUENCY OF OCCURRENCE	LEVEL OF IMPACT PERCEIVED PROJECT SUCCESS
1 - Very seldom 2 - Seldom 3 - Often 4 - Very often 5 - Always		1 - No impact 2 - Little impact 3 - Moderate impact 4 - High impact 5 - Severe impacted			
	CRITERIA			1 - 5	1 - 5
1	Changes in accommodation needs (Scope creep)				
2	Redesign of the building (facilities, H & S and operational flow within the building)				
3	Specification and design changes				
4	Increased project budget (Cost creep)				
5	Changing time schedules during planning and construction phases (Time creep)				
6	Delays in procuring the services of consultants and contractors				
7	Non-compliance to health and safety requirements whilst the building is under				
8	Changes in legislative requirements (Municipal by-laws, Building regulations, etc.)				
9	Successful use of local suppliers, labour and sub-contractors (Contract participation goals)				
10	Implementation and successful completion of training programs (EPWP/NYS)				

Question 3: Are the following elements addressed adequately during briefing meetings and how important is it that these factors are addressed during the project initiation stage?

CURRENT LEVEL OF PERFORMANCE		LEVEL OF IMPORTANCE		CURRENT LEVEL OF PERFORMANCE	LEVEL OF IMPORTANCE
1 - Totally inadequate 2 - Inadequate 3 - Adequate 4 - Constructive 5 - Very good		1 - Unimportant 2 - Of little importance 3 - Important 4 - Moderately important 5 - Very important			
CRITERIA				1 - 5	1 - 5
1	Extent of client involvement				
2	Roles and responsibilities of all role players				
3	Accountability of role players				
4	Scope control measures				
5	Project cost (Cost control measures)				
6	Commencement date of construction				
7	Functionality of building				
8	Aesthetics of building				
9	Executability of the project				
10	Consider future maintenance cost				
11	Communication networks				
12	Procurement method				
13	Quality				
14	Health and safety				
15	Environmental impact				
16	Standards and specifications (Green building)				
17	Formal training on HIV/AIDS and technical skills transfer				
18	Contract participation goals (Making use of local suppliers, labour and subcontractors)				

Question 4: Which of the following factors drive changes to the construction brief and what impact does it have on achieving project success and client satisfaction?

FREQUENCY OF OCCURRENCE		LEVEL OF IMPACT ON CLIENT SATISFACTION	FREQUENCY OF OCCURRENCE	LEVEL OF IMPACT ON CLIENT SATISFACTION
1 - Very seldom 2 - Seldom 3 - Often 4 - Very often 5 - Always		1 - No impact 2 - Little impact 3 - Moderate impact 4 - High impact 5 - Severe impacted		
	CRITERIA		1 - 5	1 - 5
1	Unclear and incomplete project brief – make up as we go along			
2	No or Improper feasibility studies			
3	Inappropriate communication between the client and the designer			
4	Lack of understanding of the client's functionality by both the client and the designer			
5	Stakeholders change project requirements and have second thoughts at later stages			
6	Initiating value engineering changes after completion of the planning			
7	Project end users are not involved in the briefing process			
8	Project end users appear at later stages of the project			
9	Clients / end users exaggerate their needs			
10	Lack of understanding different users' culture and traditions			
11	Designers ignore the client role and behave unilaterally			
12	Uncoordinated and incorrect construction documents			
13	Brief information is still being given during later design and construction stages			
14	Lack of design experience of the consultant team			
15	Lack of presentation and visualisation of design by consultants			
16	Lack of regulatory and incomplete up-dating on progress made per project phase			
17	Lack of functional, aesthetic, safety requirements and constructability			
18	Project life cycle and procurement processes not considered or fully understood by stakeholders			
19	Lack of consideration of environmental requirements			
20	Lack of conceptualisation of design by the project manager			
21	Restricted design fees			
22	Changing government regulation and codes			
23	Lack of information provision by client or delay in issuing thereof			
24	Lack of information provision by project manager in issuing thereof			
25	Lack of communication and co-ordination between government authorities and design firms over planning and approvals			
26	Meeting new technology changes			
27	Responding to political pressures			
28	Upgrade project facilities			
29	Materials are no longer available in market and use better substitute materials			
30	Eliminate proven poor quality materials and equipment			

Question 5: To what extent does an inadequate project brief contribute to client dissatisfaction?

Rating scale: 1 = none 2 = little 3 = moderate 4 = substantial 5 = major

Rating ->

Please elaborate:**Question 6: To what extent must NDPW's project briefings be improved?**

Rating scale: 1 = none 2 = little 3 = moderate 4 = substantial 5 = major

Rating ->

Please elaborate:

Question 7: In terms of managing projects by NDPW project managers, which are the most common causes of project failure that have major impact on achieving project success?

FREQUENCY OF OCCURRENCE		LEVEL OF IMPORTANCE TO ACHIEVE PROJECT MANAGEMENT SUCCESS		FREQUENCY OF OCCURRENCE	LEVEL OF IMPORTANCE
1 - Very seldom 2 - Seldom 3 - Often 4 - Very often 5 - Always		1 - Unimportant 2 - Of little importance 3 - Important 4 - Moderately important 5 - Very important			
CRITERIA				1 - 5	1 - 5
1	Poorly defined project scope.				
2	Inadequate risk management.				
3	Failure to identify key assumptions.				
4	Project managers who lack experience and training.				
5	Project managers not applying sound project management methods and strategies.				
6	Lack of effective communication at all levels.				
7	Inadequate involvement of project manager's supervisor				
8	Poor management of both client and NDPW expectations.				
9	Ineffective leadership.				
10	Lack of detailed documentation.				
11	Failure to track project requirements.				
12	Failure to track progress and report back timely.				
13	Lack of detail in the project plans (Quality, cost control, H & S).				
14	Inaccurate time and cost estimates.				
15	Unable to manage cultural differences in project teams.				

Question 8: In terms of implementing projects, which are the most common causes of project failure that have the highest impact on achieving project success?

FREQUENCY OF OCCURRENCE		LEVEL OF IMPACT ON ACHIEVING PROJECT SUCCESS		FREQUENCY OF OCCURRENCE	LEVEL OF IMPACT
1 - Very seldom 2 - Seldom 3 - Often 4 - Very often 5 - Always		1 - No impact 2 - Little impact 3 - Moderate impact 4 - High impact 5 - Severe impact			
CRITERIA				1 - 5	1 - 5
1	All members of professional team are not suitably qualified.				
2	Professional team's capabilities do not match what is required on a specific project.				
3	Client representative's project knowledge doesn't match what is required on the project.				
4	Constant scope changes by client.				
5	Delay in approval of concept designs by clients and issuing revised needs assessments.				
6	Delay in approval of sketch plans.				
7	Delay in obtaining Heritage approval when working on Heritage buildings.				
8	Insufficient funding for project implementation.				
9	Time delays in procuring the services of a suitable contractor.				
10	Appointed contractor's knowledge base is insufficient.				
11	Appointed contractor's contract administration capabilities are limited.				
12	Inadequate project management capabilities of the appointed contractor.				
13	Poor management of subcontractors by appointed main contractors.				
14	Too much reworks on projects.				
15	Delay in closing out projects once practical completion has been taken.				

Question 12: What are the negative implications of mismatching the departmental project manager?

FREQUENCY OF OCCURRENCE
1 - Very seldom
2 - Seldom
3 - Often
4 - Very often
5 - Always

LEVEL OF IMPORTANCE TO ACHIEVE PROJECT MANAGEMENT SUCCESS
1 - Unimportant
2 - Of little importance
3 - Important
4 - Moderately important
5 - Very important

		FREQUENCY OF OCCURRENCE	LEVEL OF IMPORTANCE
	CRITERIA	1 - 5	1 - 5
1	Improper briefing.		
2	Lack of control over the professional team.		
3	Lack of clear direction and objectives of the project.		
4	Client leading the project manager and taking advantage of the situation.		
5	Time delay in decision making.		
6	Poor communication.		
7	Incomplete or poor reporting.		
8	Inaccurate budget cash flows		
9	Poor time forecasting.		
10	Excessive time, cost and quality slippages.		

Please add more implications

	CRITERIA	1 - 5	1 - 5
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Question 13: Which of the following activities are being performed by departmental project managers?

Frequency of occurrence – 1 = never, 2 = very seldom, 3 = seldom, 4 = often, 5 = very often

PM's level of performance – 1 = completely inadequate (not able at all), 2 = inadequate (basic capabilities), 3 = adequate (average capabilities), 4 = more than adequate (good), 5 = mastered role (in depth capabilities).

Level of Importance – 1 = unimportant, 2 = of little importance, 3 = moderately important, 4 = important, and 5 = very important

CRITERIA		FREQUENCY OF OCCURRENCE	PMs' LEVEL OF PERFORMANCE	LEVEL OF IMPORTANCE
		1 - 5	1 - 5	1 - 5
1	Active participation in planning and defining scope of the project			
2	Effective planning and managing supply chain management procedures			
3	Interpreting Bar-Charts			
4	Play leading role in project risk analysis			
5	Accurate time estimating and interpretation of planning schedules			
6	Accurate cost estimating and interpretation of project estimates			
7	Developing a budget in consultation with the consultant team			
8	Formulate and compile relevant project documentation			
9	Creating Bar-Charts			
10	Controlling Quality			
11	Monitoring and Reporting Progress			
12	Strategic influencing the project stakeholders to attain project objectives.			
13	Managing risks and related issues that could delay progress			
14	Benefits Realisation analysis of project			
15	Active participation at all meetings and constructive feedback			

Question 14: Which of the following qualities do departmental project managers portray?

PROJECT MANAGERS' LEVEL OF THE PERFORMANCE		LEVEL OF IMPORTANCE TO ACHIEVE PROJECT SUCCESS		PM LEVEL OF PERFORMANCE	LEVEL OF IMPORTANCE
1 - Totally inadequate (not able at all) 2 - Inadequate (basic capabilities) 3 - Adequate (average capabilities) 4 - More than adequate (good) 5 - Mastered role (in depth capabilities)		1 - Unimportant 2 - Of little importance 3 - Important 4 - Moderately important 5 - Very important			
CRITERIA				1 - 5	1 - 5
1	Inspires a shared vision of where to go to and the ability to articulate it.				
2	Good communicator - Project leadership calls for clear communication about goals, responsibility, performance, expectations and feedback.				
3	Integrity - Good leadership demands commitment to, and demonstration of, ethical practices ('walk the talk')				
4	Enthusiasm - Enthusiastic leaders are committed to their goals and express this commitment through optimism.				
5	Empathy - "It's nice when a project leader acknowledges that we all have a life outside of work."				
6	Leadership competence - The ability to challenge, inspire, enable, model and encourage must be demonstrated if leaders are to be seen as capable and competent.				
7	Ability to Delegate Tasks – project managers demonstrate their trust in others through their actions; how much they check and control their work, how much they delegate and how much they allow people to participate.				
8	Cool Under Pressure - When project managers (leaders) encounter a stressful event, they consider it interesting, they feel they can influence the outcome and they see it as an opportunity.				
9	Team-Building Skills – The team leader must know the appropriate leadership style to use during each stage of team development. The leader must also have an understanding of the different team players styles and how to capitalise on each at the proper time, for the problem at hand.				
10	Problem Solving Skills - Although an effective leader is said to share problem-solving responsibilities with the team, we expect our project leaders to have excellent problem-solving skills themselves.				

Question 15: Do departmental project managers take time to foster the following skills?

LEVEL OF THE PROJECT MANAGERS' PERFORMANCE		LEVEL OF IMPORTANCE TO ACHIEVE PROJECT SUCCESS		FREQUENCY OF OCCURRENCE	LEVEL OF IMPORTANCE
1 - Totally inadequate (not able at all) 2 - Inadequate (basic capabilities) 3 - Adequate (average capabilities) 4 - More than adequate (good) 5 - Mastered role (in depth capabilities)		1 - Unimportant 2 - Of little importance 3 - Important 4 - Moderately important 5 - Very important			
CRITERIA				1 - 5	1 - 5
1	Develop the gift of foresight - making reasonable predictions based on practical assumptions.				
2	Become more organised and detail-oriented.				
3	The ability to lead by applying appropriate people skills depending on the situation.				
4	Exceptional communication skills in different terms – different horses for different courses.				
5	Empathy - "It's nice when a project leader acknowledges that we all have a life outside of work."				
6	Pragmatism – ability to apply common sense to resolve problems.				
7	Project manager's ability to handle conflict, disputes and resolve issues immediately.				

Question 16: To what extent have departmental project managers developed as managers?

LEVEL OF THE PROJECT MANAGERS' PERFORMANCE		LEVEL OF IMPORTANCE TO ACHIEVE PROJECT SUCCESS		PM LEVEL OF PERFORMANCE	LEVEL OF IMPORTANCE
1 - Totally inadequate (not able at all) 2 - Inadequate (basic capabilities) 3 - Adequate (average capabilities) 4 - More than adequate (good) 5 - Mastered role (in depth capabilities)		1 - Unimportant 2 - Of little importance 3 - Important 4 - Moderately important 5 - Very important			
	CRITERIA	1 - 5	1 - 5		
1	Creativity of project managers is the spark that propels projects forward and that captures peoples' attention.				
2	A stellar project manager knows the organisational structure, policies, rules and regulations intimately and knows how to work within such boundaries and not let the structure impinge upon the process or the project.				
3	People with keen insight are often able to sense what others are feeling and thinking; consequently, they're able to respond perfectly to another through their deeper understanding.				
4	The knowledge base must be so ingrained and integrated into their being that they become transparent, focusing on what they need to learn and develop.				
5	It's the project manager's commitment that pulls the team forward during trying times.				
6	Managers who respect and connect with others on a human level inspire great loyalty.				
7	Flexibility and versatility are the pathways to speedy responsiveness.				
8	Having fun whilst producing outstanding results (Lightness) complements the seriousness of the task at hand as well as the resolve of the team, therefore contributing to strong team results and retention.				
9	Discipline as self-mastery can be exhilarating whist remaining focused on the job at hand is the ability to choose and live from what one pays attention to.				
10	Excellent managers see the big picture while also paying attention to the smaller details of the project.				

Question 17: Often project managers find themselves being pulled between the client, end users, the community, the project team members and even the parent organisation including senior management. To what extent have project managers mastered the following traits?

LEVEL OF THE PROJECT MANAGERS' PERFORMANCE		LEVEL OF IMPORTANCE TO ACHIEVE PROJECT SUCCESS		PM LEVEL OF PERFORMANCE	LEVEL OF IMPORTANCE
1 - Totally inadequate (not able at all) 2 - Inadequate (basic capabilities) 3 - Adequate (average capabilities) 4 - More than adequate (good) 5 - Mastered role (in depth capabilities)		1 - Unimportant 2 - Of little importance 3 - Important 4 - Moderately important 5 - Very important			
CRITERIA				1 - 5	1 - 5
1	Project managers have a mindset where they focus on and succeed in finding solutions to problems.				
2	Departmental project managers are participative at all times and have found the right balance between consulting, deciding and acting timeiously.				
3	Project managers remains focused on the client and listen effectively to their needs, take on board the feedback they are getting and look for ways of incorporating it whenever they can.				
4	The challenge that project managers respond to is finding solutions that address the issues without compromising the overall project structure, i.e. striving for a win-win situation.				
5	Project managers lead by example in terms of openness and honesty, and are also prepared to take risks and learn from their mistakes.				
6	Adaptability is a key characteristic of the departmental project managers.				
7	Project managers have recognised the importance of the collective team effort in getting results and have learnt to keep project team members motivated and even push team members the boundaries to get results.				

Question 18: Is the cause of project failure in terms of time, cost, quality, scope creep and social objectives more system based (red tape in departmental procurement methodology) or a people based (organisational, project managers, consultants, contractors) or a combination or both? Please elaborate.

Please insert an "X" where applicable.

System based

☐

People Based

☐

Both

☐

Please elaborate:

--

Question 19: On typical NDPW projects, which are the most common causes of project failure in terms of organisational readiness for project implementation?

FREQUENCY OF OCCURRENCE		LEVEL OF IMPACT ON ACHIEVING PROJECT SUCCESS	
1 - Very seldom 2 - Seldom 3 - Often 4 - Very often 5 - Always		1 - No impact 2 - Little impact 3 - Moderate impact 4 - High impact 5 - Severe impact	
	CRITERIA	FREQUENCY OF OCCURRENCE	LEVEL OF IMPACT ON ACHIEVING PROJECT SUCCESS
		1 - 5	1 - 5
1	Lack of clear top management and ministerial ownership and leadership in managing the respective portfolios.		
2	Lack of effective and efficient engagement with stakeholders at Head Office level with clients.		
3	Lack of clear senior management ownership and leadership at Head Office level and the perceived lack of both the ability and urgency to resolve operational issues effecting service delivery on the ground.		
4	Lack of effective and efficient engagement with stakeholders at Regional Office level with clients.		
5	Lack of skills and a proven approach to project management by the NDPW clients at both Regional and Head Office levels.		
6	Lack of skills and a proven approach to project management and risk management by management and support components at Head Office level.		
7	Lack of skills and a proven approach to project management and risk management by management and support components at Regional level.		
8	Lack of skills and a proven approach to project management and risk management by project managers.		
9	Evaluation of design proposals driven by initial costs (price) rather than long-term value for money		
10	Lack of understanding of, and contact with, the supply industry (consultants, contractors, suppliers of materials and goods) at senior levels in the organisation.		
11	Lack of clear management ownership and leadership to ensure full organisational support at regional level.		
12	Consultants failing to perform due to lack of not being suitably qualified, lack of experience, lack of exposure to the specific type of project or being in default by not rendering and efficient and effective service.		
13	Unsuitable contractors appointed thereby failing to perform due to lack of experience, inadequate capabilities in terms of project administration and management, or poor cash flow.		
14	Social objectives of NDPW in terms of appointing BEE consultants and contractors supersedes all other objectives such as timeous delivery of project within acceptable cost and quality parameters including health and safety on site.		
15	Appointment of consultants and contractors based on price and preference is viewed as being too subjective, hence the bid is generally awarded to the tenderer with the highest scoring points irrespective of identified financial and commercial risks.		

Question 20: Indicate which one of the following levels best describes the present organisational situation of NDPW in terms of organisational maturity.

Level 1 Organisations at this level experience infrequent project performance predictability. Project management is performed inconsistently across the organisations and it is highly probable that the majority of the projects experience cost overruns, time delays, defective deliverables. Isolated success stories are results of individual competent people, individual effort and unusual sacrifices. Very little training is provided if any.

☐

Level 2 occurs when there are indications that project management has been adopted as a methodology and that project management roles and responsibilities are defined. There are well developed templates, procedures and cost and schedules are being tracked. Proper and timeouts training is provided both technical and on generic project management topics as well as organisational procedures. However, underlying disciplines are not well understood or consistently followed. Therefore project success still is largely unpredictable and cost and schedule problems remain the norm.

☐

Level 3 Project management methodologies are integrated with other organisational structures and procedures. A PMO/PSO facilitates functional units' understanding of basic project management practices, well-defined performance management policies and assessments and a clear path for continuous improvement. Proper up to date project management tools and techniques are adopted and used throughout the organisation. Problems are methodically anticipated and efficiently prevented so their impacts are minimised. Information is collected, shared and used across projects. The organisation demonstrates its commitment to project management by establishing a fully fledged competent PMO/PSO with specific responsibilities for deployment of a standard project management methodology.

☐

Level 4 is described as comprehensive where there is organisational-wide commitment to project management culture. The emphasis is to ensure that project management supports the business goals of the organisation. Quantitative project objectives are set to measure progress in implementing project management procedures and to determine the effectiveness of these procedures. Project success is the norm where performance in areas of cost, quality and time conform to the baseline project execution plan.

☐

At **Level 5** is described as optimising with a focus on continuous improvement. Project management roles and responsibilities are well understood and implemented by all. Common causes of project management problems are prioritised and systematically eliminated. There is participation in benchmarking as a way to continue to generate ideas for improvement and as a way to refine project performance metrics. Project success is the norm, and meet or even surpass, objectives in the areas of cost time, scope quality, organisational social objectives and client expectations.

☐

Question 21: What is the purpose of measuring performance of an organisation?

NECESSITY TO EVALUATE PROJECTS WITHIN NDPW		CURRENT LEVEL OF EVALUATING PROJECTS WITHIN NDPW		NECESSITY TO EVALUATE	CURRENT LEVEL OF EVALUATING PROJECTS
1 - Strongly disagree 2 - Disagree 3 - Not sure 4 - Agree 5 - Strongly agree		1 - Never 2 - Seldom 3 - Only when necessary 4 - Often 5 - Always			
CRITERIA				1 - 5	1 - 5
1	Evaluate – How well is the organisation performing?				
2	Control – How can we ensure that we are doing the right thing (Adding real value)?				
3	Budget – On what programs, people or projects should the organisation spend money?				
4	Motivate – How can one motivate line staff, middle managers and stakeholders to do the things necessary to improve performance?				
5	Promote – How can we convince political leaders, stakeholders and citizens that the organisation is doing a good job?				
6	Celebrate – What accomplishments are worthy of the important organisational ritual of celebrating success?				
7	Learn – Why is what working or not working?				
8	Improve – What exactly should who do differently to improve performance of the organisation?				

Question 22: What is the main purpose of evaluating projects?

NECESSITY TO EVALUATE PROJECTS WITHIN NDPW		CURRENT LEVEL OF EVALUATING PROJECTS WITHIN NDPW		NECESSITY TO EVALUATE	CURRENT LEVEL OF EVALUATING PROJECTS
1 - Strongly disagree 2 - Disagree 3 - Not sure 4 - Agree 5 - Strongly agree		1 - Never 2 - Seldom 3 - Only when necessary 4 - Often 5 - Always			
CRITERIA				1 - 5	1 - 5
1	Reinforcing accountability of the organisation to its stakeholders.				
2	Facilitating organisational and individual learning and change.				
3	Provide a platform for sharing knowledge amongst peers and all divisions in the organisation.				
4	Strengthening partnerships between NDPW, client, consultants and contractors.				
5	Promote understanding with regards to the operational environment and associated risks.				
6	Operationalise total transparency.				
7	Influencing organisational culture for continuous improvement.				
8	Provide accurate information for future decision-making and project implementation methodologies, internal processes and policies.				

Question 23: Indicate which one of the following levels best describes the present organisational situation within NDPW in terms of their Project Management Office (PMO) or Project Support Office (PSO).

Level 1 is the Reactive Project Management stage where methods are undocumented and delivery, budgets and schedules are uncontrolled. At this basic level, PMO's need to establish methods for project scheduling, time tracking, resource assignments, project tracking, oversight & support, and perhaps use an automated project dashboard to track project success.

☐

Level 2 occurs when companies begin adopting Repeatable Processes. The main project management processes have been defined, but not constantly used or always followed. Still, project teams find it difficult to repeat earlier successes, and the project still risks exceeding budgets and schedules. At this level, PMO's should automate project budgeting, risk and issue tracking, requirements tracking, resource management.

☐

Level 3 PMO's show a commitment to Proactive, Standardized Project Management. They employ documented standard project management and delivery processes, and consistently use these processes companywide for project delivery. When these new tasks are mastered, the PMO can focus on automating other functions such as financial management and business process modelling.

☐

Level 4 PMO's demonstrate Measured Project Management. Quantitative key performance indicators have been specified for project success and are monitored frequently. The PMO has achieved predictable and controllable project delivery, and is now free to become more "innovative."

☐

At Level 5, the most mature PMO enterprises continuously improve project management. At this level, the "connected" PMO can focus on automating project implementation and management, collaboration through social networks and blogs – and communication through text, IM, video or mobile.

☐

Question 24: Listed below are a number of key activities to be performed by a PMO/PSO. Will the establishment of a formal PMO/PSO in each regional office aid NDPW in becoming a project competent organisation and improve service delivery?

NECESSITY FOR A PMO / PSO WITHIN NDPW REG OFFICES		CURRENT NDPW HEAD OFFICE PMO's LEVEL OF PERFORMANCE		NECESSITY FOR A PMO/PSO	CURRENT LEVEL OF HEAD OFFICE PMO PERFORMANCE
1 - Strongly disagree 2 - Disagree 3 - Not sure 4 - Agree 5 - Strongly agree		1 - Never (Non-existent) 2 - Seldom (In place but ineffective) 3 - Only when necessary (More reactive in nature) 4 - Often (In place and effective) 5 - Always (In place, very effective and efficient)		1 - 5	1 - 5
CRITERIA					
1	Establish and deploy a common set of project management processes and templates, which saves each project manager, or each organisation, from having to create these on its own. These reusable project management components help projects start up more quickly and with less effort.				
2	Build the methodology and updates it to account for improvements and best practices. For example, as new or revised processes and templates are made available, the PMO deploys them consistently to the organisation.				
3	Facilitate improved project team communications by having common processes, deliverables, and terminology. Less misunderstanding and confusion occurs within the organisation if everyone uses the same language and terminology for project-related work.				
4	Provide training (internal or outsourced) to build core project management competencies and a common set of experiences. If the training is delivered by the PMO, there is a further reduction in overall training costs paid to outside vendors.				
5	Deliver project management coaching services to keep projects from getting into trouble. Projects at risk can also be coached to ensure they don't worsen.				
6	Track basic information on the current status of all projects in the organisation and provides project visibility to management in a common and consistent manner.				
7	Track organisation-wide metrics on the state of project management, project delivery, and the value being provided to the business. The PMO also assesses the general project delivery environment on an ongoing basis to determine the improvements that have been made.				
8	Act as the overall advocate for project management to the organisation. This includes actively educating and selling managers and team members on the value gained through the use of consistent project management processes.				

Question 25: The following questions are applicable to the Construction Industry Development Board

25.1

25.1 In what manner are contractors assessed when registering with the cidb?

--

25.2

25.2 Currently, when updating the cidb progress report the contractor is only assessed in terms of whether the project was completed on time, within budget and within the set quality parameters by indicating "Yes" or "No" to each one of the factors. Do you think this type of assessment is sufficient or should more pertinent questions be asked? If yes, please list a few aspects you would like contractors to be assessed on upon completion of a project.

a	
b	
c	
d	
e	

25.2

25.2 Currently, when updating the cidb progress report the contractor is only assessed in terms of whether the project was completed on time, within budget and within the set quality parameters by indicating "Yes" or "No" to each one of the factors. Do you think this type of assessment is sufficient or should more pertinent questions be asked? If yes, please list a few aspects you would like contractors to be assessed on upon completion of a project.

a	
b	
c	
d	
e	

25.3

25.3 Are the majority of the contractors that are registered with the cidb suitably graded?

NO ☐ YES ☐

Please elaborate:

--

25.4 What are the potential benefits for a client making use of cidb registered contractors?

25.4

Please elaborate:

--

25.5 Does cidb registration guarantee performance?

25.5

NO

YES

Please elaborate:

--

25.6

25.6 What strategies and best practices should be adopted to improve the development of emerging contractors?

a	
b	
c	
d	
e	

THANK-YOU FOR YOUR CO-OPERATION IN ANSWERING THE ABOVE

ALL THE ABOVE INFORMATION YOU SHARE WILL BE STRICTLY CONFIDENTIAL

PLEASE GO TO THE NEXT SHEET: PART 3

Respondent Code:

26

Question 26: To what extent has NDPW adopted best practices in their approach to establish project management as the corporate methodology where everyone within the supply chain understands their contribution toward achieving project success?

LEVEL OF ORGANISATIONAL (NDPW's) PERFORMANCE		LEVEL OF IMPORTANCE TO ACHIEVE PROJECT SUCCESS		LEVEL OF ORGANISATIONAL PERFORMANCE	LEVEL OF IMPORTANCE
1 - Completely inadequate (nothing in place) 2 - Inadequate (systems in place but totally inefficient) 3 - Adequate (systems in place but barely efficient) 4 - More than adequate (efficient) 5 - Mastered processes (maximum efficiency)		1 - Unimportant 2 - Of little importance 3 - Important 4 - Moderately important 5 - Very important			
	CRITERIA	1 - 5	1 - 5		
1	Standardised business processes to facilitate project implementation				
2	Standardised and easy to use tools, up to date software and templates				
3	Effective performance assessments of all role players in the project implementation process in relation to their respective roles.				
4	Effective assessment of skills and development of competencies				
5	Development of strategic training/education programs				
6	Formalised mentoring and coaching plans				
7	Development of career paths				
8	Requirement and support for industry certification				
9	Effective management of resources both financial and human				
10	Development of an efficient process for resource planning/allocation				
11	Effective knowledge management adding value to the supply chain.				
12	Alignment of projects to the strategic goals of the organisation				
13	Efficient tracking and ease of reporting on projects' status and collating information				
14	Reduction in the time and money spent on ensuring projects are brought to a successful conclusion				
15	Development and roll out of a Project Management Office (PMO) or Project Support Office (PSO) function				

Question 27: In addressing the issues relating to the problems of cultural differences has NDPW developed procedures to resolve issues timely and swiftly?

LEVEL OF ORGANISATIONAL EFFICIENCY IN ADDRESSING ISSUES		LEVEL OF IMPORTANCE TO ACHIEVE PROJECT SUCCESS		LEVEL OF EFFICIENCY	LEVEL OF IMPORTANCE
1 - Totally inadequate (not able at all) 2 - Inadequate (basic capabilities) 3 - Adequate (average capabilities) 4 - More than adequate (good) 5 - Mastered role (in depth capabilities)		1 - Unimportant 2 - Of little importance 3 - Important 4 - Moderately important 5 - Very important			
	CRITERIA	1 - 5	1 - 5		
1	Well defined guidelines in how to deal with bias cultural differences and understanding the impact it could have on the organisation's efficiency levels.				
2	A formulated framework for developing a high performing organisation which takes account of cultural differences and how to leverage the diversity present.				
3	Ability to identify the nature and implications of cultural differences within the organisation itself as well as within the project teams and working with contractors.				
4	Management's ability to act swiftly, unbiased and resolve incidents immediately without prejudiced as they arise.				
5	Organisation's ability to heed to lessons learnt.				

Appendix D

The Pearson's product moment coefficient correlation amongst factors results of the research questionnaire.

CORRELATIONS AMONG "FACTORS"

	Q1a	Q1b	Q2	Q3	Q4	Q7	Q8	Q9	Q12	Q13a	Q13b	Q14	Q15	Q16	Q17	Q19a	Q21	Q22	Q24	Q26	Q27	Q28
Q1a	1.00	0.58	-0.72	0.39	-0.34	-0.04	-0.15	0.10	0.26	0.43	0.24	0.38	0.35	0.31	-0.18	0.05	0.32	-0.07	0.06	-0.01	0.08	0.06
Q1b	0.58	1.00	-0.44	0.17	-0.07	0.11	0.00	-0.04	0.37	0.39	0.20	0.27	0.09	0.09	-0.14	0.22	0.50	0.22	0.30	-0.08	-0.08	-0.03
Q2	-0.72	-0.44	1.00	-0.48	0.52	0.35	0.39	-0.40	-0.09	-0.39	-0.23	-0.61	-0.48	-0.47	0.11	0.05	-0.10	0.32	0.14	-0.06	-0.06	-0.13
Q3	0.39	0.17	-0.48	1.00	-0.23	-0.25	-0.43	0.38	-0.24	0.33	0.30	0.43	0.44	0.45	0.04	-0.26	-0.09	-0.18	-0.15	0.26	0.36	0.22
Q4	-0.34	-0.07	0.52	-0.23	1.00	0.65	0.41	-0.51	-0.15	-0.27	-0.09	-0.26	-0.26	-0.21	0.27	0.33	0.25	0.47	0.37	-0.11	-0.07	-0.16
Q7	-0.04	0.11	0.35	-0.25	0.65	1.00	0.57	-0.45	0.17	-0.24	-0.17	-0.29	-0.32	-0.29	0.21	0.30	0.32	0.25	0.29	-0.07	-0.03	-0.17
Q8	-0.15	0.00	0.39	-0.43	0.41	0.57	1.00	-0.50	0.32	-0.07	0.06	-0.29	-0.25	-0.22	0.09	0.31	0.40	0.39	0.40	-0.31	-0.12	-0.33
Q9	0.10	-0.04	-0.40	0.38	-0.51	-0.45	-0.50	1.00	-0.29	0.10	0.01	0.46	0.27	0.18	0.09	-0.55	-0.51	-0.45	-0.50	0.40	0.20	0.39
Q12	0.26	0.37	-0.09	-0.24	-0.15	0.17	0.32	-0.29	1.00	-0.08	-0.27	-0.09	-0.39	-0.39	-0.43	0.39	0.62	0.27	0.44	-0.49	-0.53	-0.35
Q13a	0.43	0.39	-0.39	0.33	-0.27	-0.24	-0.07	0.10	-0.08	1.00	0.86	0.47	0.52	0.65	0.10	-0.14	0.08	0.06	0.05	0.02	0.05	0.07
Q13b	0.24	0.20	-0.23	0.30	-0.09	-0.17	0.06	0.01	-0.27	0.86	1.00	0.40	0.53	0.76	0.22	-0.19	0.00	0.07	0.00	0.02	0.14	0.04
Q14	0.38	0.27	-0.61	0.43	-0.26	-0.29	-0.29	0.46	-0.09	0.47	0.40	1.00	0.54	0.44	0.25	-0.30	-0.01	-0.08	0.00	0.07	0.13	0.13
Q15	0.35	0.09	-0.48	0.44	-0.26	-0.32	-0.25	0.27	-0.39	0.52	0.53	0.54	1.00	0.79	0.40	-0.42	-0.21	-0.29	-0.31	0.42	0.44	0.44
Q16	0.31	0.09	-0.47	0.45	-0.21	-0.29	-0.22	0.18	-0.39	0.65	0.76	0.44	0.79	1.00	0.34	-0.30	-0.17	-0.30	-0.31	0.28	0.34	0.34
Q17	-0.18	-0.14	0.11	0.04	0.27	0.21	0.09	0.09	-0.43	0.10	0.22	0.25	0.40	0.34	1.00	-0.48	-0.19	0.13	0.00	0.50	0.45	0.24
Q19a	0.05	0.22	0.05	-0.26	0.33	0.30	0.31	-0.55	0.39	-0.14	-0.19	-0.30	-0.42	-0.30	-0.48	1.00	0.50	0.23	0.32	-0.41	-0.36	-0.19
Q21	0.32	0.50	-0.10	-0.09	0.25	0.32	0.40	-0.51	0.62	0.08	0.00	-0.01	-0.21	-0.17	-0.19	0.50	1.00	0.71	0.83	-0.49	-0.33	-0.42
Q22	-0.07	0.22	0.32	-0.18	0.47	0.25	0.39	-0.45	0.27	0.06	0.07	-0.08	-0.29	-0.30	0.13	0.23	0.71	1.00	0.89	-0.32	-0.20	-0.39
Q24	0.06	0.30	0.14	-0.15	0.37	0.29	0.40	-0.50	0.44	0.05	0.00	0.00	-0.31	-0.31	0.00	0.32	0.83	0.89	1.00	-0.43	-0.29	-0.44
Q26	-0.01	-0.08	-0.06	0.26	-0.11	-0.07	-0.31	0.40	-0.49	0.02	0.02	0.07	0.42	0.28	0.50	-0.41	-0.49	-0.32	-0.43	1.00	0.74	0.80
Q27	0.08	-0.08	-0.06	0.36	-0.07	-0.03	-0.12	0.20	-0.53	0.05	0.14	0.13	0.44	0.34	0.45	-0.36	-0.33	-0.20	-0.29	0.74	1.00	0.51
Q28	0.06	-0.03	-0.13	0.22	-0.16	-0.17	-0.33	0.39	-0.35	0.07	0.04	0.13	0.44	0.34	0.24	-0.19	-0.42	-0.39	-0.44	0.80	0.51	1.00

Frequency of occurrence of the more predominate delays relative to the respective project phases				
Serial	Serial	Delays per Project Phase	Freq	Implications of delays
	1	Project program & allocations		
1	1.1	Continuous flow of projects to maintain planning & expenditure cycles	3.42	Inconsistent work flow - severe impact on PM work load & MTF
2	1.2	Prioritising projects	3.15	Delayed project implementation
3	1.3	Finalising program for next FY	3.36	Delayed completion of planning
4	1.4	Allocations - CONSULTANTS	4.35	Delayed completion of planning / project implementation
5	1.5	Allocations - CONTRACTOR	3.75	Delayed project implementation
6	1.6	Re-alignment of allocations	2.95	Delayed planning, implementation, payments & inaccurate reporting
7	1.7	Status 3 project information out-dated	5.00	Incomplete PI, WCS distorted MTF cycle
8	1.8	Start/stop of projects due to various combinations of the above	4.85	Combination of the above
	2	Issuing Planning Instructions		
9	2.1	Late issuing of planning instruction.	2.96	Delayed planning
10	2.2	Issuing Planning Instructions without allocations	3.75	WCS distorted
11	2.3	WCS status 3B but PI not issued	4.12	WCS distorted - 3B services
12	2.4	Unrealistic time frames	4.85	Revise FT - distorted reporting
13	2.5	Unrealistic estimates due to poor initiation	4.88	Revise estimate - distorted reporting & allocations
14	2.4	Unrealistic contract periods due to poor initiation	3.86	Revise cont. period - ditto
15	2.5	Delayed Baseline Project Execution Plan	4.05	Visit site to confirm scope & accept PI
16	2.6	Deviance in scope of work from PI	4.68	PI rejected - distorted reporting
17	2.7	Incomplete planning instruction (Supporting documentation)	4.35	PI rejected - distorted reporting & delayed implementation
18	2.8	Additional projects	4.65	Non -exiting priority list - delayed implementation
19	2.9	Designated PM not suitable for project	3.56	Project administration problems causing delays
20	2.10	File / correspondence lost	4.25	Planning delayed

Serial	Serial	Delays per Project Phase	Freq	Implications of delays
	3	Complete Planning		
	3.1	Complete Planning In-House		
21	3.1.1	ID projects - too little lead time	4.75	Priority lists / Work Load
22	3.1.2	Appropriation of drawings	5.00	Non existing
23	3.1.3	Shortage of staff to Draft Spec / Bills	3.56	Work load of PMs & Professional services Part A, B, C
24	3.1.4	Incomplete / Improper planning	4.35	Capacity of PMs and Professional Services
25	3.1.5	Changing Project Managers due to workload	1.15	Completion of planning delayed
	3.2	Complete Planning - Consultants		
	3.2.1	Appoint Consultants		
26	3.2.1.1	No allocation for consultants	3.45	Planning stopped
27	3.2.1.2	Delay in requesting nominations invite bids	3.43	Planning delayed - Priorities and work load differs
28	3.2.1.3	Delay in receiving nominations	2.93	Planning delayed - Priorities and work load differs
29	3.2.1.4	Appoint Consultants - Accept & forward to HO	3.11	Planning delayed - Priorities and work load differs
30	3.2.1.5	Appoint consultants on system by HO	3.76	Planning delayed - Priorities and work load differs
31	3.2.1.6	Appoint consultants incorrect banking details	1.84	Payments delayed and cash flow projects on the WCS impeded
32	3.3.1	Geographical location of consultants	2.12	Impedes co-ordination & communication
33	3.3.2	Client representatives not attending briefing	3.45	Incomplete / non-comprehensive briefing / planning
34	3.3.3	Inadequate capacity / competence of client representatives	4.79	Incomplete / non-comprehensive briefing / planning
35	3.3.4	KAM managers not attending briefing	4.86	Distorted reporting / poor reflection on department
36	3.3.5	Inexperience of consultants appointed	4.12	Delay completion of planning & progress on site
	3.4	Prepare documentation		
37	3.4.1	Scope changes - new needs & norms	4.85	Planning & Implementation delayed - or Stopped
38	3.4.2	Approval of sketch plans Capital Works	4.96	Planning & Implementation delayed - obscured reporting
39	3.4.3	Approval of planning Heritage Section	5.00	Planning & Implementation delayed - or Stopped
40	3.4.4	Poor quality bid documentation	3.95	Unnecessary Variation orders Max 30% resulting in incomplete project reduced to 20% in 2011
41	3.4.5	Evolving returnable tender documents	4.52	Delay in completing returnable documents Extend Financial tender date - redo 2 to 4 times
42	3.4.6	Nomination of Bid Spec Members - availability	4.36	Delay in approval of documentation
43	3.4.7	Availability of evaluation committee members	4.57	Delay in approval of documentation
44	3.4.8	Availability of Bid Committee	1.35	Delay in approval of procurement strategy
	4	Procuring Bids		
45	4.1	Delayed submission of procurement certificate	4.05	Extend financial tender date - delayed implementation
46	4.2	Confirmation of need for the project by the Client	4.32	Extend financial tender date - delayed implementation
47	4.3	Funds not available	2.53	Project Stopped - carry over for next financial year
48	4.4	Approval of additional funds re revised estimate	4.42	Extend financial tender date - delayed implementation
49	4.5	Delay in confirming responsiveness	4.85	Delayed adjudication cannot do scoring
50	4.6	Availability of Evaluation Committee Members	4.36	Delayed adjudication
51	4.7	Incorrect assessment of responsiveness and scoring	3.96	Delayed adjudication
52	4.8	Lost bids and documentation	2.32	Delayed adjudication
53	4.9	Delay in adjudicating bids	3.87	Delayed project implementation
54	4.10	Validity period of bids prescribed	1.10	Delayed project implementation

Serial	Serial	Delays per Project Phase	Freq	Implications of delays
55	4.11	Delayed updating of WCS re statuses & validity	4.61	Distorted reporting and cash flows
56	4.12	Incorrect banking details of contractor	1.50	Delayed progress payments negatively impacting on expenditure and cash flows on the WCS
57	4.13	Delayed submission of priced B of Q	3.06	Delayed award
58	4.14	Delayed verification of B of Q	3.00	Delayed award
59	4.15	Delayed submission of OHS Plan	4.76	Delayed award
60	4.16	Delayed verification of OHS plan	4.32	Delayed award
61	4.17	Delay updating WCS	3.15	Distorted reporting & cash flows & forced tender dates
62	4.18	Re-invitation of bids due to non-responsiveness	1.61	Delayed project implementation
63	4.19	Re-invitation of bids - default by contractors	1.84	Delayed project implementation
64	4.20	Availability of Bid Committee Members	1.35	Delay in award
65	4.21	Availability of Sub-bid Committee Members	2.65	Delay in award
66	4.22	Delay in compiling contracts by legal services	4.35	Delayed site hand over
67	4.23	Lost files	2.36	Delayed award implementation
68	4.24	Logistical Problems: Personnel, faulty IT & printing equipment, paper shortages	4.63	Delayed award implementation
	5	CONSTRUCTION PHASE		
69	5.1	Delayed site handover		Delayed project implementation and possible under expenditure
	5.2	Progress & expenditure	0.96	
70	5.2.1	Contractor's logistical problems	3.78	Under expenditure
71	5.2.2	Contractor's cash flow problems	3.65	Under expenditure
72	5.2.3	Delay in material delivery	3.21	Under expenditure
73	5.2.4	On site labour and subcontractor problems	3.84	Under expenditure
74	5.2.5	Inclement weather	2.58	Under expenditure
75	5.2.6	Submission of Variation Orders	3.53	Under expenditure
76	5.2.7	Approval of Variation Orders	4.12	Under expenditure
77	5.2.8	Poor progress due to insufficient experience	3.52	Under expenditure
78	5.2.9	Bad workmanship resulting in reworks	4.51	Under expenditure
79	5.2.10	Delays caused by non-responsiveness consultants	3.76	Re issuing of info and drawings required
80	5.2.11	Delays caused by non-responsiveness PM	4.23	Re contract administration
81	5.2.12	Client reps not attending site meetings	3.46	Distorted reporting and delay in formalising requests
82	5.2.13	KAM Managers not attending site meetings	3.08	Distorted reporting and delay in formalising requests
	5.3	Delays on Payments		
83	5.3.1	Banking details not processed timely	3.65	Under expenditure
84	5.3.2	Recent site hand over	2.51	Under expenditure
85	5.3.3	Site handed over but contractor not on site	2.75	Under expenditure
86	5.3.4	No receipts/insurance for material on site	4.35	Under expenditure
87	5.3.5	Legal issues wrt claims against the contractor	0.85	Under expenditure
88	5.3.6	Approval of Variation Orders by Client	4.27	Under expenditure
89	5.3.7	Delayed progress payment certification	1.24	Under expenditure and WCS distorted
90	5.3.8	Delay in processing payment	1.85	Under expenditure and WCS distorted
91	5.3.9	Risk of being put of site due to under performance	3.65	Under expenditure
92	5.3.10	Files Lost for processing payments	2.36	Under expenditure

Serial	Serial	Delays per Project Phase	Freq	Implications of delays
	5.4	Practical Completion		
93	5.4.1	Delayed completion due to outstanding items	4.93	Under expenditure and unnecessary carry overs
94	5.4.2	Delayed completion inspection	3.13	Under expenditure and unnecessary carry overs
95	5.4.3	Delay in processing practical works completion	3.51	Under expenditure and unnecessary carry overs
96	5.4.4	Files lost	2.36	Under expenditure and unnecessary carry overs
	5.5	Works Completion		
97	5.5.1	Delayed completion due to outstanding items	4.83	Under expenditure and unnecessary carry overs
98	5.5.2	Delayed completion inspection	1.64	Under expenditure and unnecessary carry overs
99	5.5.3	Delay in processing works completion	3.67	Under expenditure and unnecessary carry overs
100	5.5.4	Files lost	3.12	Under expenditure and unnecessary carry overs
	5.6	Final Completion		
101	5.6.1	Delayed due to 12 month defect liability period	2.53	Under expenditure
102	5.6.2	Legal claims against contractor or department	0.65	Under expenditure and unnecessary carry overs
103	5.6.3	Latent defects	3.85	Under expenditure and unnecessary carry overs
104	5.6.4	Delay in obtaining/processing final account	4.76	Under expenditure and unnecessary carry overs
105	5.6.5	Delayed final completion inspection.	3.35	Under expenditure and unnecessary carry overs
106	5.6.6	Delay in processing final completion and final payments	4.31	Under expenditure and unnecessary carry overs
107	5.6.7	Files lost	3.12	Under expenditure & delayed project closeout
108	5.6.8	Files with auditors cannot process work	2.62	Under expenditure & delayed project closeout
		Mean	3.50	

Frequency of occurrence: 1 = never; 2 = seldom; 3 = often; 4 = very often; 5 = always

Attention: The Manager

19 September 2012

Dear Madam / Sir

Re: A Systems Approach to Project Implementation within the Public Sector

The enclosed survey on the assessment of the Project Support Office (PSO) Model and the Project Evaluation Framework constitutes part of a study 'A Systems Approach to Project Implementation within the Public Sector' relative to the National Department Public Works to determine:

8. Whether project objectives are clearly defined for assessing the level of project success?
9. The extent to which clients contribute to project success or failure?
10. Whether current project managers' capabilities are matched with the actual post requirements?
11. If projects are monitored, reviewed and evaluated effectively to induce organisational learning?
12. If the NDPW has fully adopted 'Project Management' as a corporate methodology?
13. Whether the NDPW's service delivery will improve by establishing Project Management Offices (PMOs) / Project Support Office (PSO) within the regional offices?
14. Whether the Construction Industry Development Board's (cidb's) registration of contractors' process contributes to performance improvement and project success rates?

In order to address this real complex scenario the sample stratum consists of NDPW clients, general contractor members of the East Cape MBA and those registered with the cidb, consultants, key NDPW personnel and departmental project managers. Your response is therefore critical to ensure the success of the survey.

Please note that your anonymity is assured, and that the questionnaire should **not take more than 10 minutes** to complete. We would be grateful if you would endeavour to complete the questionnaire and return it by **8 October 2012** by return e-mail to een.greyling@dpw.gov.za or per facsimile to 086 532 8504 (Preferably per e-mail).

Should you have any queries please do not hesitate to contact me at (041) 408 2077, 082 804 2251 or per e-mail.

Thanking you in anticipation of your response.



Een Greyling
Researcher



John Smallwood, PhD (Construction Management)
Professor, and Head, Dept. of Construction Management
Programme Director, MSc (Built Environment) Programme,
Promoter

Project Support Office (PSO) Model and Evaluation Questionnaire: Part 1

Respondents: Clients, Consultants, Contractors and key NDPW staff and Project Managers

Date completed: _____

Respondent code: _____

1. Please indicate your involvement in NDPW projects.

Please insert a "1" where applicable

Client	Consultant	Key NDPW Staff	NDPW PM	Agency PM	Contractor

2. Please indicate the number of years' experience you have in the project management / construction environment:

Please insert a "1" where applicable

< 1	1 - 5	5 - 10	10 - 15	15 - 20	20 + years

3. Please indicate the number of NDPW projects you have been involved in:

Please insert a "1" where applicable

< 1	1 - 5	5 - 10	10 - 15	15 - 20	years

4. Please indicate the average Rand Value (Million) of NDPW projects you have been involved in:

Please insert a "1" where applicable

< 1	1 - 5	5 - 10	10 - 15	15 - 20	20 +

Please go to next sheet for Part 2

Project Support Office (PSO) Model and Evaluation Questionnaire: Part 2Respondent Code: **Assessment of the PSO model:**

The focus of the well experienced Project Support Office (PSO) team is to coordinate and report on all projects and programs within the NDPW and to be the centre of excellence that supports project managers in the implementation of the functions required to achieve successful project completion.

The PSO main functions can be summarised as follows:

- | | |
|-----|--|
| 1. | Establish a standard project management methodology, including tools, a collaborative environment and communication standards. |
| 2. | Develop and maintain forms and templates to facilitate the development of project estimates, project plans, project schedules, risk management, issues management, change management, project acceptance, and project reports. |
| 3. | Provide Project Management Services in terms of PM practices and techniques, provide training, coaching, guidance and mentoring thereby developing and maintaining a workforce of competent project managers. Search outside the NDPW for best practices worthy of adopting internally. |
| 4. | Review and audit the implementation of project management within the NDPW to ensure good project management practices are being applied whilst emphasising collaboration rather than personal reviews. |
| 5. | Provide increased resource utilisation across the organisation matching project managers with project requirements and helping to balance the workload of project managers. |
| 6. | Collect the best documentation and techniques from each successful project to add to the project knowledge base and disseminate throughout the organisation. Share project experiences and data for use in future projects and to improve project management methods (knowledge management). |
| 7. | Receive, consolidate and distribute information for all projects. Act as a single point of contact for all project information and a central point of control of projects and communications for issues and risks across all projects. |
| 8. | Provide a central, customer-focused office to care for the concerns of the client, consultants, contractors and other stakeholders. |
| 9. | Ensure critical projects are on time and within the budget by providing objective accountability and review at every stage, from initiating to closing. |
| 10. | Utilising a collaborative workspace, the PSO staff can assist project managers with administrative activities such as project schedule creation and update, report production and distribution, and maintaining other project documents. |

The aim of this assessment is to determine whether the establishment of PSOs within the regional offices will improve project implementation within the NDPW and project performances. For each of the following statements, please insert a "1" in the box which applies.

1. On a scale of 'strongly disagree' to 'strongly agree', to what extent do you agree that the value of a PSO includes the following (please note the 'unsure' option):

Please insert a "1" where applicable

	Question	Unsure	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.1	Improved project briefings - Reduced aborted design work and project planning time.						
1.2	Improved quality of project deliverables and reduced turnaround time in decision-making.						
1.3	Reduced time to get up to speed on new projects - Reduced project lifecycle time.						
1.4	Easy access for all stakeholders to a well informed standardized knowledgebase.						
1.5	Early identification and proactive management of project issues and risks.						
1.6	Better containment and management of project scope.						
1.7	Improved accuracy of cost and time estimates.						
1.8	Best-Practices and Lessons Learned Brokerage - More opportunities to leverage and reuse knowledge to standardise.						
1.9	Reduced overall project delivery costs in terms of consultants and construction.						
1.10	Reduced organisational internal project costs because common tasks are managed at the PSO level.						
1.11	Competent workforce of project managers and supply chain support.						
1.12	Improved reporting for decision-making.						
1.13	More effective and efficient procurement of services providers, both consultants and contractors.						
1.14	Better communication with clients and stakeholders - Increased communication and coordination across project portfolios.						
1.15	Improved perceptions of the NDPW as an organisation by the clients, consultants, contractors and the public as the end users.						

2. Do you have any comments in general regarding the establishment of PSOs?

Assessment of the Project Evaluation Framework:

Project evaluation is viewed to be a systematic and objective assessment of an ongoing or completed project, program, or policy, including its design, implementation, and results. The aim is to determine the relevance and fulfilment of objectives, development efficiency, implementation effectiveness, impact, and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the future decision making on project implementation.

The aim of this assessment is to determine whether constructive project evaluation of the NDPW's projects will induce organisational learning and improve project implementation as a whole. For each of the following statements, please tick the box which applies.

-

3. On a scale of 'strongly disagree' to 'strongly agree', to what extent do you agree that to promote consistency the evaluation report should, as far as possible, raise the following questions / address the following issues (please note the 'unsure' option):

Please insert a "1" where applicable

	Question	Unsure	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.1	Were the project objectives achieved?						
3.2	Was the project completed on time, within budget, and according to specification?						
3.3	Are the clients, end-users and other stakeholders satisfied with the project results?						
3.4	Were the business case forecasts (success criteria) achieved?						
3.5	Overall success of the project – taking into account all the success criteria and performance indicators, was the project a success?						
3.6	Organisation and implementation of project – did we adopt the right processes?						
3.7	In retrospect, could we have planned and implemented the project better?						
3.8	What lessons were learned about the way the project was developed and implemented?						
3.9	What went well? What did not proceed according to plan?						
3.10	Project team recommendations – record lessons and insights for posterity. These may include, for example, changes in procurement practice, delivery, or the continuation, modification or replacement of the project or any aspect thereof.						

4. Do you have any comments in general regarding the implementation of constructive evaluation of projects?

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5. On a scale of 'strongly disagree' to 'strongly agree', to what extent do you agree that the value of a PSO within the following project implementation agencies would also be beneficial (please note the 'unsure' option):

Please insert a "1" where applicable

	Project implementing agency	Unsure	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
5.1	Provincial Public Works Department						
5.2	Municipalities						
5.3	Coega						
5.4	IDT						

6. On a scale of 'strongly disagree' to 'strongly agree', to what extent do you agree that to promote consistency project evaluations within the following project implementation agencies would also be beneficial (please note the 'unsure' option):

Please insert a "1" where applicable

	Project implementing agency	Unsure	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
6.1	Provincial Public Works Department						
6.2	Municipalities						
6.3	Coega						
6.4	IDT						

THANK-YOU FOR YOUR CO-OPERATION IN ANSWERING THE ABOVE

ALL THE ABOVE INFORMATION YOU SHARE WILL BE STRICTLY CONFIDENTIAL

**Descriptive statistic results of the assessment of the PSO model
and the effectiveness of the evaluation framework**

Appendix H

	n	Minimum	Maximum	Mean	SD
Q1_1	119	4.00	5.00	4.75	0.44
Q1_2	119	4.00	5.00	4.66	0.48
Q1_3	119	2.00	5.00	4.61	0.64
Q1_4	119	3.00	5.00	4.67	0.49
Q1_5	119	3.00	5.00	4.55	0.58
Q1_6	119	3.00	5.00	4.48	0.57
Q1_7	119	2.00	5.00	4.29	0.76
Q1_8	119	3.00	5.00	4.55	0.58
Q1_9	119	2.00	5.00	3.87	0.82
Q1_10	119	2.00	5.00	4.09	0.77
Q1_11	119	2.00	5.00	3.81	0.81
Q1_12	119	2.00	5.00	4.34	0.67
Q1_13	119	2.00	5.00	4.26	0.83
Q1_14	119	2.00	5.00	4.61	0.55
Q1_15	119	3.00	5.00	4.55	0.56
Q3_1	119	2.00	5.00	4.66	0.54
Q3_2	119	2.00	5.00	4.78	0.52
Q3_3	119	4.00	5.00	4.75	0.44
Q3_4	119	3.00	5.00	4.56	0.55
Q3_5	119	3.00	5.00	4.60	0.53
Q3_6	119	3.00	5.00	4.30	0.67
Q3_7	119	2.00	5.00	4.36	0.71
Q3_8	119	3.00	5.00	4.45	0.61
Q3_9	119	3.00	5.00	4.46	0.59
Q3_10	119	3.00	5.00	4.60	0.51
Q5_1	119	3.00	5.00	4.84	0.41
Q5_2	119	3.00	5.00	4.83	0.44
Q5_3	119	2.00	5.00	4.70	0.62
Q5_4	119	3.00	5.00	4.73	0.56
Q6_1	119	3.00	5.00	4.85	0.40
Q6_2	119	3.00	5.00	4.85	0.42
Q6_3	119	2.00	5.00	4.71	0.61
Q6_4	119	3.00	5.00	4.75	0.56
Valid n (list wise)	119				