THE INFLUENCE OF THE ELECTRICITY DISTRIBUTION RESTRUCTURING
ON THE NELSON MANDELA BAY MUNICIPALITY

By

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Submitted in partial fulfilment of the requirements for the

MAGISTER IN BUSINESS ADMINISTRATION

In the Faculty of Business and Economic Sciences
Nelson Mandela Metropolitan University

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November 2008
DECLARATION

This work has not been previously accepted in substance for any degree and is not being submitted in candidature for any other degree.

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ACKNOWLEDGEMENTS

I hereby wish to express my gratitude to all the people who enabled the research to be successfully and timeously completed. Without the support, guidance and encouragement of certain individuals this would not have been possible and would like in particular to mention the following:

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MVULENI JOSEPH BUKULA

PORT ELIZABETH in the Republic of South Africa, November 2008
ABSTRACT

The objective of this research is to assess the impact to the Nelson Mandela Bay Municipality due to ongoing Electricity Distribution Industry Restructuring in South Africa as directed by the Electricity Distribution Industry Holdings on behalf of the Department of Minerals and Energy’s adopted Electricity Distribution Blue Print Report of 2001.

Literature review of scholarly literature was conducted on privatisation of public utilities that offered an international perspective on experiences of other countries that has undergone similar experiences of restructuring of public assets, the state of Electricity Supply Industry in South Africa with the demonstration of structural financial and physical flows and historical background of the restructuring, proposed future model and strategic plans to achieve the future goals.

Research methodology and design was done through combination of the four-research types classification in their order of sophistication except the predictive research, namely exploratory, descriptive, and analytical or explanatory researches with a further inclusion of deductive research. The compilation of data through questionnaires was also employed.

Perceptions on internal impact to the NMBM due to electricity services restructuring were solicited from the sample of the top management of the NMBM, the intention was to ensure the economies of scale, greater transparency and competition in terms of service delivery were sustained during and beyond Regional Electricity Distributor establishment. Financial position of NMBM as a critical instrument for its progress has to be protected to ensure it fulfils its constitutional development mandate.

The findings of the research were in strong support of ensuring operational financial viability; to meet the legitimate employment, economic and social interest of all employees; development and implementation of change management strategies; and NMBM assuming leading role in the process.
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<td>EED</td>
<td>Electricity and Energy Directorate</td>
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<td>GGP</td>
<td>Gross Geographic Product</td>
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<td>IDP</td>
<td>Integrated Development Plan</td>
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<td>IPPs</td>
<td>Independent Power Producers</td>
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<td>NERSA</td>
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CHAPTER ONE

THE PROBLEM AND ITS SETTINGS

1.1 INTRODUCTION

Throughout the public sector, but particularly in local government, there has been a trend away from a producer orientation towards customer sovereignty (Harrow & Shaw, 1992:113).

Worrall, Cooper and Campell-Jamison (2000:613) wrote on the impact of organisational change on the work experiences and perceptions of public sector managers and quote Ferlie and Pettigrew (1996) that within the whole public sector, and parts of the economy which used to be within the public sector, there have been changes in structures, in styles of governance, in organisational culture, in everyday working relationships and, perhaps most important, in long term career structures and the nature of the relationship between employer and employee.

It appears that strategies for organisational change embodying downsizing, delayering, cost reduction and outsourcing have recently become an aphorism for maintaining success and creating competitive edge in complex organisations, irrespective of whether they provide products or services, or whether they are privately or publicly owned (Worrall et al. 2000:616).

According to Yocom and Helms (2001:137) over the past several years, there has been a steady movement toward deregulation of the electric industry on an international basis. Advocates of electricity deregulation (more appropriately termed restructuring, because so far it has generally public utilities) emphasize the theoretical benefits of customer choice:

- Universal falling electricity prices for all consumers in all regions;
- Likely increases in utility efficiency;

- Enhanced services and energy technology innovations; plus

- The omnipotence of the global competitive marketplace.

According to Rowlands, Parker and Scott (2002:112) through the introduction of competition, systems traditionally characterised by public and/or private monopolies generating, transmitting and distributing electricity are being radically transformed. Although the details of restructuring plans vary by jurisdiction, virtually all have at least one thing in common: every location undergoing electricity industry restructuring now has, or will soon have competition in the generation of electrons.

1.2 THE STATEMENT OF THE PROBLEM

Problem statement is a clear, precise, and succinct statement of the question or issue that is to be investigated with the goal of finding an answer or solution that could pertain to existing business problems where a manager is looking for a solution, this falls within the realm of applied research (Sekaran, 2003:70).

The Energy White Paper of South Africa, (1998:15) stated that government, through Department of Minerals and Energy, establish a company that will consolidate the EDI into the maximum number of financially viable Regional Electricity Distributors, known as REDs.

The main problem, which this study aims to address, is the assessment of the perceived impact to Nelson Mandela Bay Municipality (NMBM) as a result of the restructuring of Electricity Distribution Industry (EDI) in South Africa.
The statement of the problem is thus defined as:

**The influence of the electricity distribution restructuring on the Nelson Mandela Bay Municipality.**

1.2.1 The statement of subproblems

A subproblem should constitute a logical subarea of the larger research undertaking. Each subproblem might be researched as a separate subproject within the larger research goal. The solutions of the subproblems, taken together, combine to resolve the main problem of research (Leedy, 1993:71).

To reach the aim of the research project in a manageable way that contributes to solve the problem, the following sub-problems were identified due to their importance: -

- What are the perceived financial implications to NMBM due to transfer of electricity services to the REDs?

- How can the legitimate employment, economic and social interests of employees be protected during the electricity services restructuring at NMBM?

- How can the implementation of the RED model at NMBM be communicated to minimise resistance to change?

- What are the consequences of full participation of NMBM in the process of establishing the proposed end-state model, REDs?

In addressing the above subproblems, an attempt is made to fully address the main problem statement of the research study.
1.3 OBJECTIVES OF THE RESEARCH STUDY

- To establish and profile the respondents that will reflect the trend of the survey on the population of the Nelson Mandela Bay Municipality and use the information for purposes of interpretation of responses;

- To establish perceived financial implications to NMBM due to restructuring of electricity services and migration to form part of RED model;

- Determine the level of protection of legitimate employment, economic and social interest of employees during the electricity services restructuring at NMBM;

- Determine the best methods on communicating the benefits of RED implementation process to minimise resistance to change;

- Highlight the consequences of full participation on NMBM in the process of RED establishment;

- Presentation of the end results of the research study to EDI Holdings (EDIH) (Pty) Ltd as an agency established by national government to oversee and facilitate the restructuring of Electricity Distribution Industry (EDI) and to the senior management of NMBM and other affected stakeholders with suggested implementation plan.

1.4 PREVIOUS RESEARCH STUDIES

Figure 1.1 below, shows that the current South African Electricity Supply Industry (ESI) structure operates in the traditional mode of vertical integration with financial and physical flows following the same path, thus generation, transmission and distribution are considered as multi-state elements of the South African ESI system. Currently, 187 municipalities and Eskom are
responsible for the distribution of electricity to customers around the country and Eskom is also responsible for the generation and the transmission functions on the ESI in South Africa.

**Figure 1.1 Current structure of the electricity supply industry (ESI) in South Africa**

Source: About the Industry – EDI Holdings 2008:1

NMBM has constitutional and other legislative rights to supply electricity within its geographical boundary as it is outlined in terms of section 152 (1)(b) of the Constitution of the Republic of South Africa Act, 1996 (Act 108 of 1996) which states that the objects of local government are to ensure the provision of services to communities in a sustainable manner and equal treatment by state institutions of all its citizens.

The current arrangement in NMBM’s Electricity and Energy Directorate (EED) is such that customers face significantly different levels of standards of supply reliability and service between Eskom Southern Region and other secondary municipalities within the proposed RED Three boundary (Eastern Cape
Province region) in particular and in South Africa in general which is inconsistent with national government objectives of promoting equal treatment by state institutions of all citizens.

As illustrated in figure 1.1 above, historically South Africa has employed a dual delivery mechanism by Eskom and municipalities. This highly fragmented industry structure has led to a looming financial crisis due to inefficiencies, disparities in tariffs, unequal treatment of customers, inadequate maintenance of networks, inability to capitalise on economies of scale and limited ability to introduce competition (http://www.ediholdings.co.za: 28/08/2008).

The EDI Restructuring Blueprint called for the industry to be consolidated, with Eskom distribution business and various municipal electricity utilities being amalgamated into six Regional Electricity Distributors (RED), hence the restructuring process (http://www.ediholdings.co.za: 28/08/2008).

Within the NMBM, the impact of the electricity distribution restructuring and migration to form part of RED Three by NMBM’s Electricity and Energy Directorate, there was no research conducted or answers brought forward to solve imminent problems related to perceived financial implications to NMBM due to transfer of electricity service, assets, human capital, customers and business obligations and its shared services.

It is for this reason that research was conducted on assessment of impact to NMBM as a result of the restructuring of EDI in South African.

1.5 DEFINITION OF KEY CONCEPTS

According to Leedy (1993:74) a term must be defined operatively; that is, the definition must interpret the term as it is employed in relation to the researcher’s project.

Operational Ringfencing: The process of separating the day-to-day business processes and operations of the ringfenced electricity distribution from its parent organisation (EDIH Perspective, 2008:2).

Financial Ringfencing: The process of identifying the value of the assets, liabilities, revenues, cost drivers and costs associated with the ringfenced electricity distribution business and to separate it from the parent entity by utilising available records, the financial statements and chart of accounts (EDIH Perspective, 2008:2).

Human Resources Ringfencing: Cuts across all the processes of the entire electricity distribution value chain. This exercise applies to all employee-related activities within the electricity distribution business and is aimed at ensuring that all employee-related activities and liabilities within the electricity distribution business are considered during the ringfencing (EDIH Perspective, 2008:2).

Electricity generation: Facilitating the production of electricity energy.

Electricity transmission: Conveying the electricity from the generation facility to the distribution system; and

Electricity distribution: Conveying electric power received from the generation facility, through the transmission system to the consumer (http://www.ediholdings.co.za: 28/082008).

Electricity Distribution Industry in South Africa is characterised as follows: -

Revenue : R33.5 billion
Customers : approximately 8.3 million
Staff : approximately 31 000
Asset Value : approximately R30 billion
Energy Purchases : approximately 110 TWh (Terawatt hour)
Distribution Lines: greater than 370 000 km (kilometres)
Distribution Cables: greater than 210 000 km (kilometres) (http://www.ediholdings.co.za: 28/082008).

*Kilowatt hour (kWh)*: A unit of energy consumption (NERSA, 2008:39).

According to Eskom Annual Report (2008:222/3) the following key concepts are outlined as follows:

**RED**: Regional Electricity Distributor

**Load shedding**: Scheduled and controlled power cuts by rotating available capacity between all customers when demand is greater than supply to avoid total blackouts in the supply area.

**Metro**: Municipalities of large cities.

**Non-technical losses**: The difference between total losses and technical losses is referred to as non-technical losses.

**Reserve Margin**: Difference between net system capability and system’s maximum load requirements (peak load or peak demand).

**1.6 DELIMITATION AND LIMITATION OF THE RESEARCH**

According to Collis and Hussey (2003:129) a limitation identifies potential weakness in the research. A delimitation explains how the scope of your study is focused on one particular area. It needs to know precisely what the researcher intends to do and with equal candor precisely what the researcher does not intend to do (Leedy, 1993:740). The following sections highlight some of the limitations and the scope of the research study that was focused on a particular area.
1.6.1 Determination of municipal boundaries

In terms of section (24)(a)(1) of the Local Government: Municipal Demarcation Act of 1998 (Act 108 of 1998) the Board determines a municipal boundary and its objective must be to establish an area that would enable the municipality for that area to fulfil its constitutional obligations including the provision of democratic and accountable government for the local community.

The demarcation process for NMBM took place in the year 2000, which brought together three electricity distributors previously under separate electricity distribution licensees, namely Despatch TLC, Uitenhage TLC and Port Elizabeth TLC. The individual licensees were subsequently revoked and NERSA issued a revised distribution license to the NMBM that is the current authorised electricity distributor for the area. After the amalgamation of the various municipalities, the NMBM established directorates to provide for different service deliveries. This gave rise to the establishment of the EED, which is partially a ringfenced directorate, which is reliant on shared services from other directorates within the NMBM. In addition the former Uitenhage TLC in 1997 entered into an agreement with a private company known as UITESCO for the distribution of electricity in its area of supply. UITESCO therefore became the licensed electricity distributor in the defined area until the new license was issued to the NMBM. UITESCO is in the process of being liquidated [Section 78(1) Review of the Electricity Service (2007:22)].

1.6.2 Key drivers and objectives for restructuring of the EDI

Cabinet Memorandum of Republic of South Africa, (2001:2) stated that following a lengthy consultation process, in May 2001, Cabinet of South Africa resolved that, following a detailed investigation by PriceWaterhouse Coopers (PwC) and the development of the PwC Blueprint, that six wall-to-wall Regional Electricity Distributors (REDs) would be established. The key drivers and objectives for restructuring of the EDI as identified at that point in time remain the same, namely: -
➢ Basic needs to be ensured that the EDI in future is best placed to meet the basic needs and requirements of electricity consumers in South Africa;

➢ Electrification programme be financed and a structure be established to support government’s initiative;

➢ Ensure protection of low-income consumers through sustainable affordable prices within plan and regulated structure regardless of location;

➢ Ensure financial viability of EDI as independent business within the context of providing high and sustained levels of service and investment in the sector;

➢ Development of labour to be ensured and that the new REDs businesses are able to promote and secure employment to their employees, skills development and training to be consistent with high technology, modern distribution business and operate within nationally agreed terms and conditions of employment;

➢ Planned and managed transition so as to ensure that the reform process is taken forward within well planned and managed transitional arrangements;

➢ Human resources to ensure that the transition to the new arrangements is done within the context of a comprehensive human resources strategy and an agreed Social Plan, in order that the interests of all individuals affected by the reform programme are protected, and that the arrangements are consistent with government policies towards skills development and social protection.
The REDs model provides that each RED will have the franchise to supply customers in its geographical area, except for contestable key industrial customers. To facilitate business efficiency, the REDs would be required to ringfence and manage the two different components of their businesses, namely distribution, which includes maintenance and operation of the network, and retail business inclusive of customer service, metering and billing separately.

While the restructuring of the EDI in South Africa has more objectives, this research study focused mainly to attempt to fully address the main problem statement through answering the four subproblems that are directly linked to the NMBM environment.

1.6.3 Demographics and statistics on NMBM

According to Integrated Development Plan (IDP) of NMBM (2008:9) the NMBM has a population of 1,1 million and covers an area of 1 950km². NMBM is the economic powerhouse of the Eastern Cape Province, contributing 44 percent to the provincial Gross Geographic Product (GGP). NMBM is the location of the largest single infrastructure development project in South Africa since 1994. The age and gender distribution in NMBM reflects a very youthful population, with 55 percent of residents falling in the age group below 30 years, with a male/female ratio of 48:52. Altogether 98 percent of households in formally demarcated municipal residential areas have access to a basic level of electricity. The NMBM has a total workforce of 7 032 employees, of whom 6 417 are permanent and 615 are temporary staff members (Annual Report, 2006/07:39).

1.6.4 NMBM administrative structure

The Municipal Manager is the head of the administration and Accounting Officer, supported by the Chief Operating Officer, Chief Financial Officer, Chief of Staff and seven Executive Directors. The directorates are outlined below:
Chief Operating Officer;
Chief Financial Officer (Budget and Treasury);
Chief of Staff;
Corporate Services;
Infrastructure and Development;
Electricity and Energy;
Environment and Health;
Economic Development and Recreational Services;
Housing and Land;
Safety and Security.

Each of the Executive Directors of the above directorates was targeted on the sample of the survey with the combination of four supporting directors and assistant directors that report to them. All employees under the level of assistant director or in the process of acting in those positions were excluded from participating in the survey method of the research study except in cases of vacant positions. Office of the Chief of Staff was targeted for only the Executive Director, as no senior staffs were available in their organisational chart.

1.6.5 Credit rating

The NMBM's overall financial position is generally sound. This sound financial position is also evidenced by the favourable credit rating received of zaA for long-term and zaA1 for short-term, which indicates the strong capacity of the municipality to repay both long-term and short-term liabilities (Annual Report, 2006/07:39).

During the restructuring of electricity services, the perceived financial implications to NMBM due to transfer of electricity services to the RED were investigated.
1.7 IMPORTANCE OF THE RESEARCH STUDY

A definition provided by Leedy (1993:11) described research as a studious inquiry or examination, especially a critical and exhaustive investigation or experimentation having for its aim the discovery of new facts and their correct interpretation, the revision of accepted conclusions theories, or laws in the light of newly discovered facts or the practical application of such conclusions theories, or laws.

The importance of the research study could be viewed from a historical background of electricity distribution in South Africa by municipal authorities through vital roles of: -

- Contributing to asset finance fund of the municipality;
- Creation of employment opportunities for local communities;
- Sustaining economic growth for their local regions;
- Assist in the positive credit rating of the municipality and;
- Provision of key service delivery for various customers in their regions.

Erakovic and Wilson cited Bale and Dale (1998) in the case of Telecom New Zealand that the ownership transition of the public sector, within the competitive environment, was considered beneficial for various stakeholders: taxpayers via the maximisation of revenue from the sales; privatised State Operating Entities through capital available from the private sector; consumers through better services.

According to Lundstrom and Lind (1996:31) the political decision makers, and the public, want to know what a certain type of service really costs the taxpayer. The worsening financial situation of many local and regional governments has also led to an interest in a more active management of public sector assets.
The importance of the research study is to make sure that during the restructuring of electricity services at NMBM, the municipality is not adversely affected and the process is not affecting the service delivery in a manner that the customers are deprived of the better service.

The researcher proposes that the outcome of the research study would be shared with the NMBM Council, industry experts that are involved in the EDI restructuring, EDI Holdings as an agency tasked by the Department of Minerals and Energy on behalf of the national government to facilitate and coordinate the EDI restructuring in South Africa, senior management of the NMBM, affected recognised organised labour and other interested relevant stakeholders.

1.8 DESIGN OF THE RESEARCH

According to Vogt (1993:196) research design is the science and art of planning procedures for conducting studies so as to get the most valid findings. Determining your research design will give you a detailed plan, which you will use to guide and focus your research (Collis & Hussey, 2003:113). A quantitative data collection method has been employed as the research instrument.

1.8.1 Data collection method

According to Leedy (1993:187) a commonplace instrument for observing data beyond the physical reach of the observer is the questionnaire. Positivistic paradigm questionnaire was used for this research study, which was a medium scale survey, each question was coded at the design stage and they were closed questions. The questionnaire sought to get informed historical experiences on engagements of the restructuring processes and perceptions about the future impact of electricity services restructuring at NMBM from the senior management point of view across the ten directorates.
Apart from section A, that tested the biographical status of the respondents like age, ethnicity, gender, education, experience on the job, directorate and job status with multiple choice questions, the questionnaire, from section B to section E, dealt with all the four subproblems of the research study in an attempt to answer the main problem statement.

1.9 OUTLINE OF THE RESEARCH STUDY CHAPTERS

The research study has been demarcated into seven chapters and the following is a summary of each chapter.

Chapter One will introduce the research topic with its related subproblems and outline the research objectives. Previous research studies on the related topic are also highlighted. Definition of key concepts is summarised in this chapter. Importance and design of the research study is also summarised.

Chapter Two deals with the beginning of the literature review on privatisation of the public utilities and offers an international perspective on experiences of other countries that has undergone similar experiences of restructuring of public assets. Electricity industry privatisation is of particular focus for its benefits and consequences for increased efficiency and effectiveness.

Chapter Three focuses on the state of ESI in South Africa and demonstrates how the structural financial and physical flows of the ESI functions at the present moment in the South African environment. Various functional flows of functions from generation, transmission to distribution are reflected. Regulatory body with its objectives and operations are highlighted. The NMBM electricity distribution operations are also dealt with in this chapter.

Chapter Four deals with EDI restructuring in South Africa and provides a comprehensive historical background of the restructuring ranging from the proposed future model of electricity delivery of electricity in South Africa, strategic plan to achieve that, deal framework, policy environment and
ringfencing of the existing electricity businesses from both local government and Eskom’s point of view.

Chapter Five focuses on the research methodology and design wherein the different types of business research are highlighted, research design that involves a series of rational decision-making, different paradigms and data collection mechanisms.

Chapter Six will outline the rationale that informs the basis for the analysis techniques that will be employed for the research study to scrutinize the data obtained from the research instrument, in this case, being a survey questionnaire. The research problem will at this chapter be supported through demonstration of the measurement of the impact, if any to the NMBM that might be caused by electricity services restructuring.

Chapter Seven will present a summary of the findings, conclude the research process and demonstrate the significance of the research study. Future course of action to take the research forward will form part of this chapter in a form of recommendations.

1.10 CONCLUSION

This chapter introduced the research topic with its subproblems and the rest of the research study.

Previous research studies and definition of key concepts were highlighted.

The importance and the research methodology and design of the research study was highlighted, the outline of the study was also illustrated.

The following chapter will explain through literature review the privatisation of public utilities from an international perspective with much focus on electricity industry privatisation.
CHAPTER TWO

PRIVATISATION OF PUBLIC UTILITIES

2.1 INTRODUCTION

In achieving the objectives of the research, the first step was to conduct a survey of scholarly literature that is accessible in the international arena on privatisation of public utilities through public offering of shares or change of ownership of assets by involving processes of Public Private Partnerships (PPPs).

The public utilities, namely gas, electricity, water and sewerage, telecommunications and public transport developed mainly as a combination of private and municipal functions in the nineteenth century. The twentieth century, however, and particularly the years immediately after the Second World War saw large-scale nationalisation. Therefore for most of the last 50 years state ownership has been the dominant mode of organising and delivering utility services (Parker, 2003: 75).

Heracleous (1999:432) stated that the push to expand state ownership in the 1960s and 1970s has met with a radical reversal in the 1980s, where governments have progressively reduced their involvement in service provision by increasing private sector involvement. Originating in Chile, the UK and New Zealand, privatisation has gradually taken on global dimensions.

Parker (2003) further stated that in the 1980s this began to change. This was because of growing discontent with the efficiency of service delivery in the public sector; and further quoted Aharoni (1986) that because technological change was creating opportunities for competition in supply where previously, monopoly was expected to lead to the lowest costs of production and makes an example of combined cycle gas turbine generating sets that significantly
reduced the optimal scale in electricity generation, enabling more firms to compete.

It has been estimated that during 1984-1995, global infrastructure privatisation projects averaged about US $200 billion in annual value (So & Shin, 1995:2).

Privatisation, as a strategy to promote growth and economic development, has become a pervasive phenomenon in less developed countries (LDCs). It is estimated that around $250 billion in assets have been privatised in these emerging economies (Forster & Mouly, 2006: 250).

Forster and Mouly (2006:250) further quoted, Jackson and Price (1994) that privatisation is a complex phenomenon that encompasses a variety of strategies aimed at reducing the role of the state in the economy and includes activities such as deregulation, corporatisation, management contracts, sale of public assets and the private provision of public services.

Privatisation is still a much-misunderstood concept in the developing countries of Asia and Africa and people in these countries feel that privatisation is being imposed. Successful privatisation strategies must therefore include complementary strategies of public sector restructuring, reform-cum-commercialisation, training and cadre development as well as private sector development with financial sector strengthening (Basu, 1994:44).

According to Forster and Mouly (2006:251), privatisation must be understood as a comprehensive reform programme intended to liberate the productive forces of a society in which the elements of design must work in tandem with unpredictable, spontaneous evolution of economic institutions. However, changes at the institutional level must be accompanied by changes at the organisational level to bring about the desired results (spontaneous evolution of economic institutions). Privatisation will normally result in enterprises having to find new ways of organising to generate and nurture new types of
capabilities that are more relevant to the environment that privatisation is trying to create.

The implementation of privatisation regimes has long been a worldwide trend, and quite controversial. Privatisation programmes have effectively halved worldwide state ownership of assets over the past two decades (Boutchkova & Megginson, 2000:31).

According to Kerr, Qiu & Rose (2008:41), overseas studies have conclusively documented a direct link between privatisation and share market development. These studies implied that governments choose privatisation as a means of developing their share markets. The analysis of share market growth via privatisation programmes has emerged from this recent trend by governments and has produced a new stream of literature on the benefits of privatisation. Benefits to individual investors are, however, not always clear.

EDI privatisation will deal with public service delivery transformation benefits of privatisation, efficiency and accountability, customer satisfaction and organisational restructuring, which are briefly reviewed below.

2.2 ELECTRICITY INDUSTRY PRIVATISATION

Since privatisation of the UK regional electricity service companies, the electricity industry has undergone strategic change in the areas of ownership, structure, operating regime and business focus. The main catalysts for change have been growing competition in the electricity generation and supply markets, a strong regulatory framework with strict pricing regimes and new legislation requiring separation of the supply and distribution business (McAdam & McLean, 2003:436).

With limited scope for differentiation, the regional electricity companies (RECs) have concentrated on improving service levels and reducing costs for their customers. Critical to the realisation of these goals has been the adoption of
total quality management (TQM) philosophy. Hence, restructuring, re-engineering of process, delivering customer requirements and meeting the regulator’s targets are all part of a holistic TQM approach (Parkinson, McAdam & Henderson, 2000:59).

ESI deregulation is taking place throughout the world, where typically public monopolistic ownership is being replaced by a privatised system in which previously vertically integrated functions have been disaggregated and competition introduced (Nelson & Dowling, 1998:481).

According to Parker (2003:76), governments have turned to restructuring and privatising their utility industries so as to curtail state subsidies. In developing countries privatisations in the utilities sector have accounted for over one-third of all privatisation transactions since 1988 and privatisation of public utilities is also occurring in the transition economies of central and eastern Europe.

Nelson and Dowling (1998:482) further stated that, in Australia, the development of electricity infrastructure and retail supply has traditionally been the responsibility of state governments. Following overseas trends, however, the states moved to restructure the electricity industry in the early 1990s, with a view to lowering costs and enhancing efficiency.

2.2.1 Public service delivery transformation

The UK has taken a lead in utility privatisation. The first major utility to be sold in the UK was British Telecom (BT), in 1984, a sell-off that attracted a surprising amount of City and public interest in the stock. This was followed by the privatisation of British Gas in 1986, the water and sewerage industry in 1989, electricity in 1990/1991, and the railways between 1995 and 1997. Coach and local bus transport in the UK was privatised during the 1980s. With the notable exception of the latter, which was structured as a competitive industry, privatisation led to the establishment of dedicated regulatory office to
protect consumers from monopoly abuse until competition arrived (Parker, 2003:76).

In attempting to define the process of privatisation, Peacock (1984:3) defined it as the complete transfer of ownership from the public to the private sector. Burnes et al. (2004), stated that privatisation takes place when a minimum of 50 percent of an enterprise’s share is sold to the private sector.

Burnes, Katsouros and Jones (2004:66) tried to investigate and establish an answer on, what is privatisation? In so doing they quoted Vickers and Yarrow (1991) who provided an answer and identified three types of privatisation as follows: -

- The transfer of state enterprise operating in competitive product markets to the private sector, e.g. state-owned car and aircraft companies;

- The privatisation of public monopolies such as water and electricity utilities;

- The contracting out of in-house services to the private sector, e.g. IT and facilities management.

Burnes et al. (2004:66), further stated that an important difference between the first and second types of privatisation is that, with the second type, governments frequently retain some rights of control, in the form of regulation. In the third case, contracting out, the public sector is even more directly involved, in that it is the customer for the contracted-out service and needs to ensure that it is getting value for money. Contracting out, therefore, widens the definition of privatisation to include the transfer of responsibility for service provision. In the USA, contracting out has tended to be the main form of privatisation.
Talbot (2001:291) stated that to further describe the privatisation of public monopolies as market-type mechanisms into the public sector where public services could not be privatised for structural and/or political reasons there were a number of attempts to introduce market-type mechanisms (MTMs). These included: internal contracting or quasi-contracting … internal markets … competitive sourcing … and “market testing” … MTM reforms were designed to introduce some elements of “competition” into public services that would, in turn, it was assumed, lead to improvements in economy, efficiency, effectiveness and customer services.

State ownership is associated with day-to-day intervention by ministers and civil servants in the management of enterprises, for example determining prices, investments and employment levels. Privatisation with effective regulation is intended to alter the state’s role to establishing the regulatory framework or the rules of the game. Private sector management then manages its enterprises within the regulatory rules. This leads to a change in the operating environment for the management of the utilities. Previously they were accountable to government and subject to final decision being made politically. Now privatised, the management are accountable to new stakeholders in the form of shareholders and private loan creditors (Parker, 2003:78).

The new South Africa came into existence in 1994. The incoming government faced a task of fiscal, political, social and economic transformation, all of which would require an effective public service capability. The scale of change required was massive, and has included extensive reforms of traditional public service structures, as well as range of innovative approaches to alternative service delivery. The present focus on the development of alternative service delivery partly reflects a recognition that reforming the traditional bureaucracy while necessary will not of itself guarantee that the service delivery needs of the new nation will be met (Russel & Bvuma, 2001:241).
An electricity distribution maintenance summit (EDI Maintenance Summit) held on 9 and 10 June 2008 in South Africa, which was held under the theme Towards a Sustainable Electricity Distribution Industry resolved the following: -

➢ Confirm and support the free basic electricity, universal access to electricity by 2012 and EDI restructuring and private-public partnerships (PPPs) in the EDI;

➢ In order to attract, recruit, develop and retain the requisite technical skills, the electricity distribution industry needs to implement proper and appropriate remuneration frameworks. In the short term, the skills shortage must be addressed by recruitment from abroad/ importing skills and outsourcing;

➢ Agreed that the South African electricity supply industry must share information and utilise international experience and technical expertise available.

Many countries, faced with the difficulties of reforming traditional bureaucracy and anxious to quickly improve service delivery and cost-effectiveness in public sector operations, have adopted privatisation or marketisation initiatives – a prescription readily promoted by international agencies, In South Africa this solution also has a place, and one key focus recently has been a public private partnerships initiative adopted by government and implemented through the national treasury department (Russel & Bvuma, 2001: 241).

Within the South African context, regulatory environment on the public private partnership has been provided by the National Department of Treasury through Treasury Regulations and Guidelines (2000:6) and involves three key elements as follows: -
A contractual element whereby a private party performs a departmental function on behalf of a national or provincial department for a specified time;

Substantial risk transfer to the private party;

A schedule of outcome-based financial rewards derived either from service tariffs or user charges, from a departmental budget or from a combination of these sources, contracts for the supply of goods and services were not seen as PPPs.

Treasury Regulations and Guidelines attempt to provide departments and provinces with a systematic approach to the issue, and insist that PPPs must demonstrate value for money, be affordable, be procured using transparent and competitive process, show substantial risk transfer to the private party and be implemented within a sound project management framework. Treasury Regulations and Guidelines Directive is a management tool that requires the department that is proposing the partnership to demonstrate value for money, affordability, transparency, risk transfer and sound project management arrangements.

Alternative service delivery means the identification, development and adoption by public departments and agencies of means of delivering public services other than through traditional, hierarchical bureaucracy. Alternative service delivery may take place within or outside the public service, or through partnerships between the public, private and or non-profit sectors. Alternative service delivery seeks to focus attention on innovative delivery solutions at the customer end. Alternative service delivery is developmental, since it involves the nurturing and support of creative solutions by those of top management into supporters and advocates for service delivery achievement rather than micro managers or controllers. Alternative service delivery is neutral with respect to ownership of state assets and employment (Russel & Bvuma, 2001:250).
2.2.2 Benefits of privatisation

Burnes et al. (2004:67) stated that the drive for privatisation arose from the economic shocks of the 1970s, which paved the way for the neo-liberal governments of Margaret Thatcher in the UK in 1979 and Ronald Reagan in the USA in 1980, both of which were committed to rolling back the frontiers of the state and giving greater freedom to the private sector. However, because of its large number of state enterprises, it was the UK which became the test bed for privatisation and which is still frequently held up as an example for others to follow.

Parker (2003:82) stated that the roles of competition and regulation are also born out by the record of the UK electricity industry. Here competition was introduced at privatisation and was quickly extended, the 12 regional electricity distribution companies had become more efficient after privatisation and a more recent review of the industry as a whole has concluded that productivity in the industry has almost doubled since privatisation.

According to Potts, (1999:388) successful privatisation and commercialisation rely on a stable macroeconomic environment. A background of hyperinflation and limited reliance on the domestic currency makes successful restructuring and reorientation to profitability virtually impossible. Fair and predictable taxation is required; haphazard and unrealistic tax requests act against enterprise efficiency.

Harland and Knight (2005:842) provided a clarification on the benefits of outsourcing at organisational level that the most significant reasons for outsourcing are to enable organisations to focus on core activities, to reduce costs, providing short-term financial benefits and balance sheet improvements. Outsourcing allows organisations to remove functional silos, separate departments and business units, and barriers between them. This provides better customer focus, flexing and changing offerings and processes to meet
changing markets. This is particularly beneficial to larger, more mature organisations whose strong, hierarchical structures make them less agile.

Public sectors are intended to safeguard services for the well being of the public where the commercialism, fragmentation and lack of regulation of the private sector may act to the detriment of citizens and taxpayers. Unchecked outsourcing within public sectors may create problems (Harland & Knight, 2005:842).

2.2.3 Efficiency and accountability through privatisation

Government efforts to privatisate public sector functions through the sale of state-owned assets and business, competitive tendering and contracting (CTC) out, and build, own, operate and transfer (BOOT) schemes are premised on the belief that the private sector is able to manage service delivery more efficiently and effectively than government. The corollary is that government becomes less interventionist and smaller. The impact of these changes on public sector managers and workers is significant. Under the rubric of new public management, private sector management practices, underpinned by human resource management (HRM) concepts, and a focus on entrepreneurship, efficiency and quality are imported into the public sector (Gramberg & Teicher, 2000:476).

The need for public servants to adopt private sector principles and practices to pursue a results-orientated approach has been hailed as the panacea for the ailing public management approach. Managerialism has been described as a concentration on the interests of management, which has resulted in a closer examination of the process and responsibilities of management. The concept implies that certain core functions of management are applicable across both private and public sectors (Lawler and Hearn, 1995:41).

Painter (1998:45) summarised managerialist reforms in the UK as subjecting public managers to transparent constraints where control and steering should
be strategic and hands-off to enable them to produce more targeted outcomes. Managers should be free to develop corporate plans, which identify specific objectives and targets, incentives and constraints in order to focus on the essentials of efficiency and effectiveness. Finally, delivery and provision should be business-like and further from politics and nearer to the market.

2.2.4 Customer satisfaction after privatisation

According to Burke, Graham and Smith (2005:85), providing a service is fundamentally different from manufacturing a product. When individuals purchase a service, however, they are influenced by the service provider and the quality of the experience or encounter they have with the service provider. The provision of service is face-to-face; the receipt of service is both a personal and a psychological experience.

There are two major ways in which firms can increase the service satisfaction of customers: -

- The first involves human resource management practices leading to high levels of employee satisfaction or morale. The logic behind this is fairly straightforward. Employees generally self-select into service occupations because they want to use their skills and aptitudes in delivering a high quality service to customers;

- The second involves the development of organisational values, policies and procedures, which support the delivery of high quality service to clients (Burke et al. 2005).

Customer satisfaction is increasingly considered as a baseline standard of performance and a possible standard of excellence for any business organisation (Mihelis, Grigoroudis, Siskos, Politis & Malandrakis, 2001:347). Companies with a bigger share of loyal customers are as a result of, profit from increasing repurchase rates, increasing cross-buying potential, higher price willingness, positive recommendation behaviour and less switching tendency
(Rust, Danaher & Varki, 2000:438). This is the main reason why we have witnessed in recent years a proliferation of work on the topic of customer satisfaction and its close cousin, service quality (Rust et al., 2000).

The concepts of service quality and service satisfaction are indeed closely related although the exact nature of these customer judgements and the relationship between them remains fuzzy as some scholars point out to be considerable overlap between the two concepts to the extent of conceiving the terms as synonymous and interchangeable (DeRyter, Bloemer & Peeters, 1997:387).

According to Jamali (2007:370) it is important for managers in the private sector, public sector, and importantly in a Public Private Partnerships (PPPs) relationship to move a step beyond internal performance measures as a reflection of actual service quality, to external measures of citizen satisfaction with services – particularly in monopolistic situations to find mechanisms to assess customer satisfaction on a regular basis. While internal performance measures may be useful, claims of success cannot be advanced without supporting evidence from concrete outcome measures, of which citizen satisfaction seems the most obvious and critical. The burden of this responsibility falls on both public and private partners in the context of PPPs. The government, in its capacity as regulator, needs to design assessment methodologies, comprising ways of evaluating performance, pricing and feedback from users. The traditional concern of the private partner with concrete service quality outputs similarly needs to be supplemented by measurements of the perceptions of customers experiencing the service. It is precisely measures like this that can allow for establishment of value for money in the PPPs context, and validating the claims that PPPs make for improved service quality.
2.2.5 Organisational restructuring

Corporate restructuring is a broad concept, however it is defined by Hoskisson and Turk (1990:459) as a major change in the composition of a firm’s assets combined with a major change in its corporate strategy. According to Heugens and Schenk (2004:87) there are three distinct types of corporate restructuring: portfolio, financial and organisational restructuring. This dimension is defined as significant changes in the structural properties of the organisation. Many reasons are put forward to justify an organisational restructuring.

According to Prechel (1994:723) organisational restructuring often occurs as a by-product of portfolio and/or financial restructuring. It is likely that significant changes in the strategic and financial capital structure of an organisation will require corresponding changes in the organisation’s authority and decision-making hierarchies.

According to Carbery and Garavan (2005:491) research on organisational change reveals that many change programmes are likely to face problems. The most common problems include human resistance, problems and conflicts between competing groups in a changing process and inertia determined by isomorphic forces from and organisation’s environment. There is also built-in inertia in individuals, structures and at organisational, and particularly structural change is likely to engender strong emotional response, however employees are likely to differ in their reactions to change, some passively resisting it to others actively undermining the change.

According to Erakovic and Wilson (2006:485) after the research study of the case of Telecom New Zealand that the findings demonstrate that the process of radical change in public sector reform are a function of market and technological factors combined with both de-institutionalisation and institutionalisation of new norms and practices.
One of the major difficulties facing any organisation contemplating change is the question of control over external variables, due to the fact of government ownership where issues related to control vacillated and, at the very time the organisation needed some operational freedom. In these circumstances the organisation needs to exert every effort to take charge of its own destiny rather than allow the external environment to control the change (Nelson & Dowling, 1998:492).

Section 197(1) of the Labour Relations Act (Act 66 of 1995) stated that the transfer of contract of employment may not be transferred from one employer to another employer without the employees’ consent and further stated on subsection 197(2) (a) that if a business, trade or undertaking is transferred in the circumstances referred to in subsection (1) (a), unless otherwise agreed, all the rights and obligations between the old employer and each employee at the time of the transfer continue in force as if they were rights and obligations between the new employer and each employee and, anything done before the transfer by or in relation to the old employer will be considered to have been done by or in relation to the new employer. Thus in South African context, workers will not be adversely affected by restructuring of EDI.

2.3 CONCLUSION

In chapter two, electricity distribution industry privatisation has been defined and public service delivery transformation through public private partnerships has been dealt with.

Chapter three will review the state of electricity supply industry in South Africa. The discussion focuses on the structured financial and physical flow of electricity supply industry, regulation and ownership of various energy sources.
CHAPTER THREE

STATE OF ELECTRICITY SUPPLY INDUSTRY IN SOUTH AFRICA

3.1 INTRODUCTION

This chapter deals with the state of ESI in South Africa. The discussion focuses on the structured financial and physical flow of ESI, ranging from electricity generation, transmission and distribution functions, regulatory status and ownership of various energy sources.

Wilson and Adams (2006:5) cited in review of security of supply in South Africa report to the Department of Public Enterprises that in South Africa, security of electricity supply is one of the most important issues facing the electricity industry currently, its customers and Government, key aspects of electricity supply security are the availability of adequate generation capacity to meet customer demand at any time and a secure and reliable transmission system to deliver power to all regions of the country.

Regulation of the ESI is discussed in this chapter with its legislative requirements, relevance in the ESI context, objectives and accountability being the main focal points of discussion.

Eskom is a South African electricity public utility, established in 1923 as the Electricity Supply Commission (ESCOM) by the government of South Africa in terms of Electricity Act (1922). It was also known by its Afrikaans name Elektrisiteitsvoorsieningskommissie (EVKOM), the two acronyms were combined in 1996 and the company is known as Eskom (http://en.wikipedia.org/wiki/Eskom:18/06/2008).

An analysis of Eskom as South African electricity public utility will be undertaken in this chapter wherein its various functional operational areas are discussed in detail.
South African government policy on ESI has changed significantly during the last few years. In terms of White Paper of 1998, it had been written such that it clarified government policy regarding the supply and consumption of energy for the next decade. The policy strengthened energy systems in certain areas, called for the development of underdeveloped systems and demonstrated a resolve to bring about extensive change in a number of areas. It addressed international trade and co-operation, capacity building, and the collection of adequate information. The document was drawn to be comprehensive, addressing all elements of the energy sector as practically as it could.

By virtue of implementing the White Paper of 1998, a policy was initiated to open up the market for electricity generation to competition through prevention of Eskom from building the required new capacity and simultaneously in pursuance of a part privatisation of existing Eskom generation assets.

Due to the South African government’s attempted privatisation of Eskom in the late 1990’s, Eskom’s requests for budget to build new power stations were denied and hence, South African President Thabo Mbeki admitted in December 2007 that this was an error, and it is now adversely affecting the South African economy (http://en.wikipedia.org/wiki/Eskom: 18/06/2008).

The NMBM’s Electricity and Energy Directorate operations will further be analysed where asset management, tariff structure and revenue base and its management will come under comparison with other similar electricity distributors in South Africa’s ESI.

Literature that was researched includes amongst others the legislated requirements on the provision of electricity in South Africa for the different spheres of government. National Energy Regulator of South Africa’s various interventions in the ESI are also utilised as its authority is supreme on issues of regulation.
Further literature review is undertaken to analyse the biggest utility in South Africa and its importance on security of supply. Published influential magazines on mining and engineering are reviewed to secure independent views of the industry and internal unpublished minutes of the various standing committees of the NMBM and source documents are utilised to give the state of electricity in South Africa.

The findings of the literature review are presented in this chapter in the following sections.

### 3.2 REGULATORY BODY

The National Energy Regulator of South Africa known as NERSA was established as a juristic person and acts as a regulatory authority established in terms of Section 3 of the National Energy Regulator Act, 2004 (Act No 40 of 2004). NERSA's mandate is the total regulation of the electricity, piped-gas and petroleum pipeline industries in terms of the Electricity Regulation Act, 2006 (Act No. 4 of 2006), and relevant gas and petroleum pipelines Acts. The mission of NERSA is to regulate the energy industry in accordance with the government laws, policies, standards and international best practices in support of sustainable development and would seek to be a world-class leader in its space.

#### 3.2.1 Regulatory strategic objectives

NERSA had industry specific regulatory strategic objectives that sought to promote investment in the ESI environment, namely:

a) To effectively and efficiently regulate the current electricity industry;

b) To develop an appropriate regulatory framework for the reforming of electricity industry;
c) To promote and advise on appropriate legislation to regulate the future electricity industry


NERSA had also a responsibility to gather reliable information to assess the performance of the regulated utilities with the intention to set benchmark standards which were in line with international standards.

3.2.2 Electricity generation licensees

The South African regulatory body, NERSA was the only body charged to issue electricity generation licences. Electricity Supply Statistics for South Africa (2004: 12) states that the NERSA had licensed fifteen generation utilities of which nine were for municipalities within South Africa, five for non-municipal utilities known as private producers and one for the country’s biggest utility, being Eskom Holdings.

Figure 3.1 shows geographic spread of the power stations in various provincial boundaries which depicts the various generation licensees as issued by NERSA which covered a total of 51 power stations and were categorised based on the source of energy they primarily utilise for power generation, and outlined by NERSA (Electricity Supply Statistics for South Africa, 2004:12) as follows: -

a) Coal Fired Generation: In South Africa, approximately 92 percent of electricity is produced by coal-fired power stations. There are 17 fully operational coal fired power stations, 10 owned by Eskom, four owned by the municipalities and three owned by the private generators;

a) Nuclear Generation: South Africa has only one nuclear power station in operation. This is the Koeberg power station, owned by Eskom. Approximately 5.8 percent of all electricity in South Africa is generated, using nuclear as primary energy source;
b) Bagasse: Bagasse is a waste product of sugar refineries and is used to produce steam and electricity for use by the sugar refineries themselves. Most of the private generation licensees are in fact sugar refineries. Almost all electricity generated using bagasse is for own use of the refineries. The excess is sold under license to local distributors. Bagasse is used as primary energy source in the generation of approximately 0.12 percent of all electricity in South Africa.

c) Hydro: Hydro generation uses the natural flow of water in a river or from a storage reservoir to generate electricity. There are 10 such power stations that operate under license of which Eskom own six; municipalities own three and one is owned by a private generator. Hydro is responsible for approximately 0.37 percent of electricity generation in South Africa.

d) Pumped Storage: This form of electricity is very similar to hydro generation. The primary source of energy in both these forms of power stations is water. In pumped storage stations however, the water that drives the plant is not obtained from natural flow, but from water that is pumped to a reservoir above the plant during periods of high cost generation. During the pumping process, electricity from coal-fired power stations is used. Eskom owns two pumped storage generation plants and a municipality owns the one plant. Although the pumped storage facilities account for 1.4 percent of all electricity produced, they used 1.8 percent of all electricity produced for the pumping of the water.

e) Gas Turbine: The gas turbines in operation in South Africa, use aeronautical diesel fuel to drive jet turbines, connected to power generators. There are seven such power generators in South Africa. Eskom owns two of them and the other five owned by municipalities. These plants are used for emergency generation only due to their
They accounted for less than 0.1 percent of all electricity generated in South Africa.

3.2.3 South Africa's nuclear programme

Some experts predict that electricity shortages, fossil fuel price increases, global warming and heavy metal emissions from fossil fuel use, new technology such as passively safe plants, and national energy security will renew the demand for nuclear power plants (http://en.wikipedia.org/wiki/Nuclear_power; 25/06/2008).

Figure: 3.1 Potential Nuclear Sites in South Africa: 2002

Source: Eskom – Nuclear Programme - 2002

Figure 3.1 show that Eskom Generation Group has identified four potential locations for nuclear power on the South African coast (namely Brazil, Schulpfontein, Bantamsklip and Thyspunt) through its Nuclear Siting
3.3 ELECTRICITY SUPPLY OVERVIEW IN SOUTH AFRICA

Figure 3.2: Energy Flow between the role players in the Electricity Supply Industry in South Africa: 2004

Source: Electricity Supply Statistics for South Africa – 2004

3.3.1 Electricity generation in South Africa

Figure 3.2 shows that private generators which are known as Independent Power Producers produced 3.2 percent of South Africa’s electricity, municipal generators produced 0.8 percent and a large amount of 96.0 percent is produced by the South African near monopoly utility, Eskom Generation. Each of the electricity generators in South Africa is discussed below:
3.3.1.1 Private generation

Figure 3.2 shows that the private generation of electricity in South Africa amounts to 3.2 percent.

The Independent Power Producers (IPPs; also: Non-utility generator (NUG)) is an entity, which is not a public utility, but which owns facilities to generate electric power for sale to utilities and end users. NUGs may be privately-held facilities, cooperatives such as rural solar or wind energy producers, and non-energy industrial concerns capable of feeding excess energy into the system (http://en.wikipedia.org/wiki/Independed_Power_Producer:25/06/2008).

Historically, electricity in South Africa has been produced in conventional coal-fired power stations. These typically have a 35 per cent thermal efficiency, which means that two thirds of the energy burned in those plants is wasted and vented back into the atmosphere as yet another contribution to global warming (http://www.ipsagroup.co.uk/operationsnewcastle.htm: 25/06/2008).

South Africa already has several licensed IPPs, the most substantial of which is Gauteng’s Kelvin power station, which has a 600-MW capacity, although less than 150 MW of this capacity is available. Other licensed IPPs include the Darling Independent Power Producer (Darlipp), which is in the process of establishing a commercial wind farm, which will ultimately have a capacity of 13 MW, to be developed over two phases, with first production starting in 2008; and Bethlehem Hydro, which is installing 7 MW of hydropower capacity, in the Free State. Power produced by Darlipp will be sold to the City of Cape Town, in terms of a power purchase agreement (PPA), while the power produced by Bethlehem Hydro will be sold to the town of Bethlehem, also under a PPA (Kohler, 2008:1).

There are also several IPPs operating in South Africa in the production of power for particular private companies. For example, the first IPP licensed in South Africa was intended to develop a small power station in KwaZulu-Natal
to supply power to paper company Mondi’s Durban mill, and Ipsa supplies power to rubber manufacturer Karbochem. Other companies that make use of privately generated power are Sasol, Tongaat Hullet, Friedenheim and TSB Sugar (Engineering News, 2008:1).

3.3.1.2 Municipal generation

Figure 3.2 shows that municipal generation of electricity in South Africa amounts to 0.8 percent. Electricity Supply Statistics for South Africa, (2004:8) stated that municipal generators provide all there output to municipal distributors. In addition, South Africa has about 16 municipal power generators, with a combined capacity of 1 841 MW (Engineering News, 2008:2).

3.3.1.3 Eskom generation

Figure 3.2 shows that Eskom Generation generates electricity in South Africa, which amounts to 96.0 percent. Over 90 percent of South African electricity comes from coal power stations. Coal is the most polluting source of energy for electricity generation and produces the greatest amount of waste, which includes nitrogen gases, sulphur gases, carbon dioxide, organic compounds, heavy metals and radioactive elements. South Africa’s power stations are typically conventional pulverised fuel (PF) stations with no flue gas desulphurisation despite having control technologies in place for reducing particulate emissions. To date, the benefits of our coal stations have generally been perceived to out weigh the environmental costs (http://soer.deat.gov.za/themes.aspx?m=260: 26/06/2008).

Eskom is the public electricity utility and supplies more than 95 percent of the country’s electricity requirements. This amounts to more than half of the electricity generated in Africa. With 24 power stations at a capacity of 39 810 MW, Eskom is among the top seven utilities in the world in terms of generation
capacity and among the top nine in terms of sales (Digest of South African Energy Statistics [DoSAES], 2006: 38).

NERSA, on Monday, 12 May 2008, approved and adopted the report on the inquiry into the national electricity supply shortage and load shedding for the period November 2007 to January 2008. The purpose of the inquiry’s report was to inform the Energy Regulator of the reasons for the electricity supply shortage resulting in the national load shedding and recommend measures to be adopted in mitigation against the electricity supply shortage and to reduce the adverse impact thereof. The following were the main findings and conclusions of the report:

a) High unplanned maintenance and load losses combined with the usual high planned maintenance of generating units during the period resulted in reduced generating capacity being available from 01 November 2007 to 31 January 2008. Poor coal quality, wet coal and low stockpile levels contributed to the unplanned generation plant outages and load losses in the period;

b) In previous load forecasts, Eskom had anticipated the current growth rate. However, the implemented measures to provide for the growth have been inadequate and slow. In particular, there have been delays in returning the mothballed generation plant to service and the implementation of energy efficiency and demand management initiatives remain behind targets. Eskom’s new build programme is experiencing delays of at least a year;

c) Inadequate primary energy procurement and power station production planning impacted coal stockpile levels in the period. Coal stockpiles were allowed to decline to unacceptably low levels and there was a reluctance to obtain supplementary coal due to its high cost and its impact on Eskom’s financial position;
d) Eskom was correct in declaring a *force majeure* on 24 January 2008. Prior to load shedding, Eskom did use other emergency options such as demand market participation (DMP) and interruptible loads extensively prior to load shedding (NERSA Media Statement, 2008: 1).

### 3.3.2 Electricity transmission in South Africa

Many regions of South Africa have demand levels in excess of generation capacity connected within the region. Thus, in order to meet demand, it is necessary to transmit significant quantities of power from those regions with generation capacity surplus to those with a generation deficit. However, the amount of power that can be transmitted from one region to another depends on the installed transmission capacity and the technical limits imposed on the transmission lines. The reliability associated with such transmission circuits depends upon the design criteria adopted for transmission planning purposes (Wilson and Adams, 2006:55).

#### 3.3.2.1 Electricity imports to South Africa

In Figure 3.2, shows that SAPP imports 3.8 percent of electricity to South Africa. The Southern African Power Pool (SAPP) came into effect on 28 September 1995 after the governments of SADC signed a memorandum of understanding. The Pool moved towards implementation in December 1995 when the national utilities of nine SADC member countries signed the Inter-Utility Memorandum of Understanding. SAPP is the first formal international power pool established outside Europe or North America. In terms of its constitution, only utilities, not individual power stations, are allowed to join the SAPP. At present its members are the utilities and Ministries involved in energy usage in Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Swaziland, Tanzania, Zaire, Zimbabwe and South Africa (Eskom Generation Communication, 2006:1).
3.3.2.2 **Eskom transmission lines**

Eskom has 26 461 km of transmission lines, which span the country and carry power to neighbouring countries. These very long distances lead to transmission losses, and other problems such as supply quality (Digest of South African Energy Statistics, 2006: 39).

Figure 3.2 shows that 95.7 percent of electricity is transmitted from Eskom generation to Eskom Distribution and 5.7 percent of electricity was transmitted to SAPP member state utilities through export deals.

3.3.2.3 **Electricity distribution**

Figure 3.2 shows that municipal and other distributors receive 39.7 percent from Eskom Distributors and 3.3 percent from IPPs. Exports from South Africa, which amounted to 5.7 percent, were transmitted to SAPP and Eskom Distribution transmitted the remaining amount of electricity to end-users. The municipal and other distributors, distributes directly to the end users.

3.3.2.4 **Electricity customer categories**

Figure 3.2 shows that the end user group was for different consumption purposes and would be categorised as such, namely domestic was consuming 1.8 percent, agriculture 2.4 percent, mining 15.9 percent, industrial (manufacturing) 38.0 percent, commercial 11.3 percent, transport 2.7 percent and other general usage being 12.8 percent.

3.4 **NMBM ELECTRICITY DISTRIBUTION**

In terms of section 40(1) of the Constitution of the Republic of South Africa Act 1996 (Act 108 of 1998) which states that in the Republic, government is constituted as national, provincial and local government which are
distinctive, interdependent and interrelated. There are general duties which are to be performed by a municipality through the provision of municipal services as stated by section 73 (1) of the Local Government: Municipal Systems Act 34 (Act 34 of 2000) that a municipality must give effect to the provisions of the Constitution and give priority to the basic needs of the local community, promote the development of the local community and ensure that all members of the local community have access to at least the minimum level of basic municipal services.

Municipalities have the executive authority and the right to administer electricity and gas reticulation in terms of Schedule 4 of Part B of the Constitution of Republic of South Africa.

3.4.1 Electricity service region

Section 78(1) Review of the Electricity Service (2007:22), states that the Nelson Mandela Bay Municipality (NMBM) is the authorised distributor of electricity for the former areas of the Port Elizabeth TRC and TLC (including the Seaview LC and Blue Horizon Bay LC), Uitenhage TRC and Despatch TLC in terms of its Electricity Distribution Licence: NER/D/Nmandela. This covers an area of approximately 3 200 square kilometres from Sundays River east of Port Elizabeth to the Van Stadens River to the west.

3.4.2 Electricity service provision

Section 2 (1) of Electricity Supply Agreement (2004:2) recorded that Eskom is presently supplying the distributor (NMBM), in terms of an existing electricity supply agreement dated 17 November 1972 (Ref No ESC 21756) concluded between ESKOM and Port Elizabeth City Council, with a supply of electricity in bulk for municipal purposes and for the purpose of distribution within the distributor’s licensed area of supply. This agreement
is effective agreement for an indefinite period, subject to three months written notice of termination by either party.

NMBM is almost entirely dependent on Eskom for the supply of electricity, which Eskom supplies to the NMBM through transmission power lines from the Grassridge substation to feed the NMBM’s two Points of Supply at the Chatty substation at 132 kilovolts and the Kudu substation 11 kilovolts (kV), in addition to this supply the NMBM has electricity generation capacity of 40 Mega Watts (MW) through its Gas Turbine generator, which is an emergency backup supply when the Eskom supply is limited or interrupted [section 78(1) Review of Electricity Service, (2007:23)].

3.4.2.1 Energy purchases

According to the NMBM Internal Management Information Data (2008:1) it is recorded that during 2006/2007 financial year of the NMBM, energy purchases from Eskom amounted to 3 832 Gigawatt hours (GWh) and energy sales within the NMBM licensed jurisdiction totalled an amount of R1, 125 billion which is indicative of an increase of 2,7 percent per annum over the last three years and is projected to grow by approximately 3,1 percent annually over the next two years.

3.4.2.2 Electricity distribution losses

Electrical power is always partially lost by transmission. This applies to short distances such as between components on a printed circuit board as well as to cross country high voltage lines. The major component of power loss is due to ohmic losses in the conductors and is equal to the product of the square of the current and the resistance of the wire (http://en.wikipedia.org/wiki/Electric_power_transmission#Losses:04/07/2008).
According to the NMBM Internal Management Information Data (2008:1) during the 2006/2007 financial year there were approximately 6.86 percent of technical and non technical losses which amounted to 252 478 GWh at a total cost of R42, 3 million of energy purchases and represents lost revenue of R79, 9 million. It is estimated that technical losses account for 67 percent of distribution losses.

3.4.2.3 Electricity tariff regimes

Table 3.1 Electricity Tariffs as from 1 July 2008 within the NMBM area of supply (All tariffs are exclusive of Value Added Tax)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Energy Charge</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOMESTIC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Meters</td>
<td>30</td>
<td>37.750 c/kWh</td>
<td>49.075 c/kWh</td>
</tr>
<tr>
<td>Prepaid Meters</td>
<td>30</td>
<td>37.750 c/kWh</td>
<td>49.075 c/kWh</td>
</tr>
<tr>
<td>Energy Charge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14.2</td>
<td>37.750 c/kWh</td>
<td>43.111 c/kWh</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMALL BUSINESS 230 VOLT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Meters</td>
<td>30</td>
<td>37.750 c/kWh</td>
<td>43.111 c/kWh</td>
</tr>
<tr>
<td>Monthly Basic Charge</td>
<td>30</td>
<td>R50.35</td>
<td>R65.46</td>
</tr>
<tr>
<td>Energy Charge</td>
<td>30</td>
<td>42.148 c/kWh</td>
<td>54.792 c/kWh</td>
</tr>
<tr>
<td>Prepaid Meters</td>
<td>30</td>
<td>48.300 c/kWh</td>
<td>62.790 c/kWh</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIUM BUSINESS 400 VOLT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Meters</td>
<td>30</td>
<td>43.791 c/kWh</td>
<td>56.928 c/kWh</td>
</tr>
<tr>
<td>Monthly Basic Charge</td>
<td>30</td>
<td>R100.70</td>
<td>R130.91</td>
</tr>
<tr>
<td>Energy Charge</td>
<td>30</td>
<td>40.755 c/kWh</td>
<td>52.982 c/kWh</td>
</tr>
<tr>
<td>Prepaid Meters</td>
<td>30</td>
<td>43.791 c/kWh</td>
<td>56.928 c/kWh</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LARGE BUSINESS 6600 VOLT AND ABOVE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Meters</td>
<td>30</td>
<td>R750.00</td>
<td>R975.00</td>
</tr>
<tr>
<td>Monthly Basic Charge</td>
<td>30</td>
<td>22.520 c/kWh</td>
<td>29.276 c/kWh</td>
</tr>
<tr>
<td>Energy Charge</td>
<td>30</td>
<td>R42.74</td>
<td>R55.56</td>
</tr>
<tr>
<td>Demand Charge per kVA</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Minutes of the NMBM Council Meeting held on 30 June 2008
Tables 3.1 show electricity tariffs as of 1 July 2008 as applicable in the NMBM area of supply. The figures shown exclude value added tax. There is 30 percent increase of tariffs across the board except in the category of indigent residential customers which is only increased by 14.2 percent, the above schedule of tariff increase was approved for implementation across the area of supply by NMBM Council, in terms of sections 30(2) and 93(4) of the Local Government: Municipal Structures Act 1998, (Act 117 of 1998 as amended), read in conjunction with Chapter 4 of the Local Government Municipal Finance Management Act 2003, (Act 56 of 2003) and by resolution taken by majority of the full number of Council.

Various processes that are summed up as follows have preceded such an increase: -

a) NMBM Council Meeting on 5 June 2008 approved an average electricity tariff increase for the distribution of electricity in the NMBM’s area of distribution of 12 percent. The tariff increase was, however, subject to a ruling by NERSA on the application by Eskom for an additional increase in electricity tariffs of 53 percent to be implemented effective from 1 July 2008. This application came subsequent to Eskom obtaining approval for tariff increases of 14.02 percent for non-municipal customers from 1 March 2008 and 15.02 percent for municipal customers from 1 July 2008.

b) On the application by Eskom for an additional tariff increase as above mentioned, NERSA Media Statement on 18 June 2008 ruled as follows:

- Eskom be allowed an average tariff increase for municipal customers of 35.9 percent;

- The increase for poor municipal residential customers is limited to 14.2 percent;
- The increase for other municipal customers be limited to 32.6 percent;

- Free Basic Electricity (FBE) is recovered at a rate equal to the Eskom Home light 1, 20Amp tariff;

- The application for accelerated Demand Side Management (DSM) costs is not allowed;

- Tariff increases for the purposes of Multi Year Price Determination are projected at 20 percent to 25 percent over the next three years.

3.4.2.4 Customer categories

A table 3.1 shows that in the NMBM there were different categories which were charging different tariff structures based on the level of consumption and those categories are listed as follows:

a) Domestic on prepaid and credit metering;
b) Small Business at 230 Volt on prepaid and credit metering;
c) Medium Business 400 Volt on prepaid and credit metering;
d) Large Business 6 600 Volt and above on credit metering.

Each customer category is metered differently on energy charge and demand charge.

3.4.3 Renewable energy source projects

Engineering News (2008:1) reported that the state-owned Central Energy Fund (CEF) subsidiary of CEF Sustainability hopes to start the implementation of an upgraded energy-efficient public lighting network for the Nelson Mandela Bay Metropolitan by early next year and hoped to have the detailed audit for the public lighting project completed by the end of 2008, and was aiming to start project implementation in early 2009. The
organisation has requested proposals for the design, construction, operation and maintenance of an upgraded energy efficient public lighting network for the service area currently operated by the NMBM.

The Municipality and CEF Sustainability said that apart from the Solar Water Heating Project, other energy efficiency projects include a Wind Power Project and the Landfill Gas Project. A solar water heater is an extremely effective and efficient way to heat water for domestic use. It is environmentally friendly and reduces demand on the grid. Market research began in November 2007 in which consumer groups were researched and 400 local NMBM residents were interviewed to assess the real potential in the Bay area (Alternative Energy Report, 2008:1).

3.4.4 Type and size of the assets under the care of the NMBM
Table 3.2 shows the type and size of assets under the ownership of the NMBM electricity services.

**Table 3.2 Type and size of the assets in NMBM**

<table>
<thead>
<tr>
<th></th>
<th>Domestic</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumers</td>
<td>216 284</td>
<td>10 312</td>
<td>304</td>
<td>226 900</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Overhead</th>
<th>Underground</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Voltage Networks (132 kV)</td>
<td>223 km</td>
<td>64 km</td>
</tr>
<tr>
<td>Medium Voltage Networks (33, 22, 11 and 6.6 kV)</td>
<td>906 km</td>
<td>1 296 km</td>
</tr>
<tr>
<td>Low Voltage Networks (415 Volts) excluding customer connection</td>
<td>408 km</td>
<td>2 435 km</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1 537 km</td>
<td>3 795 km</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of Supply</td>
<td>2 138.5 km²</td>
<td></td>
</tr>
<tr>
<td>Maximum Demand</td>
<td>610 MW</td>
<td></td>
</tr>
<tr>
<td>Energy Demand</td>
<td>3 256 GWH</td>
<td></td>
</tr>
<tr>
<td>Streetlights</td>
<td>52 875</td>
<td></td>
</tr>
<tr>
<td>Capital Expenditure</td>
<td>R55 million</td>
<td></td>
</tr>
<tr>
<td>Number of Interruptions</td>
<td>12 502</td>
<td></td>
</tr>
</tbody>
</table>

*Source: NERSA Audit Report of NMBM’s Electricity assets – 2006*
Table 3.2 (a) shows that total electricity consumers in the NMBM area of supply totalled an amount of 226,900 with domestic being 216,289, commercial 10,312 and industrial 304.

Table 3.2 (b) shows that the total overhead networks that include high voltage, medium and low voltage totalled 3,914 km and underground networks totalled 2,254 km.

Table 3.2 (c) shows that during the year under review for audit the area of supply covers an area of 2,138 km. Total maximum demand recorded during the audit period was 610 MW. Energy demanded for consumption during the year under review reached a maximum of 3,256 GWH. Throughout the NMBM there were 52,865 streetlights. Capital expenditure for investment on refurbishment and maintenance of the electricity networks was R55 million. There were 12,502 recorded number of interruptions for both planned and unplanned outages of the electricity supply.

Table 3.2 does not indicate the movable and immovable assets as they are regarded in the EDI as support assets but rather indicate the wires business assets that are key in distribution of electricity.

3.4.5 Electrification program

Section 78(1) Review of Electricity Service, (2007:24) state that the NMBM has a proud record with respect to the national electrification program as on the onset of the national electrification program, the NMBM made funds available and also obtained funds from Eskom and national government through Department of Minerals and Energy to address the backlog in connecting households without electricity to the distribution network.
3.5 CONCLUSION

NERSA Audit Report (2006:18) stated that management of the finances of the EED was still heavily depended on the funding available to the NMBM. Care must be taken to ensure the long-term health of the organisation. Governance and management through shared service demonstrated an intrusive operation, a robust and well-designed base networks have been established, continual loss of skilled personnel needed to be arrested, and generally the EED was a well managed administratively and quality of supply to customers was of reasonable standard relatively to other distributors. Chapter four will deal with the South African EDI historical context of restructuring in South Africa.
CHAPTER FOUR

EDI RESTRUCTURING IN SOUTH AFRICA

4.1 INTRODUCTION

The Electricity Distribution Industry (EDI) in South Africa has a current turnover rate of about R35 billion per annum and it employs about 31 000 people. Currently about 187 municipalities and Eskom Holdings' distribution division are distributing electricity to over 8.2 million customers. The South African EDI is faced with a challenge of inefficiency, fragmentation, disparate tariffs, and lack of maintenance of infrastructure. These inefficiencies result in numerous problems that affect the economy and the populace negatively, including an economic loss of between R2- R8 billion per annum (http://www.ediholdings.co.za/Content/ArticleDetail.asp?ID=11/31/07/2008).

The need for change in the South African EDI, has been driven by the EDI Blueprint Report as adopted by the Department of Minerals and Energy during February 2001 that stated that electricity is currently supplied to end users in South Africa by Eskom and approximately 187 municipalities. Eskom supplies electricity to approximately 40 percent of consumers by number, which represents about 60 percent of sales by volume. The municipalities collectively sell to about 60 percent of consumers by number, amounting to about 40 percent of sales by volume. The municipal distribution sector is not homogeneous. It is characterised by a small number of very large distributors and a large number of very small distributors. The 12 largest municipalities account for about 75 percent of all electricity sales in the municipality sector. South African electricity industry is vertically integrated. The following sections deals with EDI historical context of restructuring in South Africa.
4.2 EDI RESTRUCTURING HISTORICAL CONTEXT IN SOUTH AFRICA

Figure 4.1 Historical context of EDI restructuring in South Africa

Source: EDI maintenance summit presentation - 2008

4.2.1 Roadmap of EDI restructuring in South Africa

Figure 4.1 shows that the history of restructuring in South Africa started early 1990s where considerable debate over EDI’s future was discussed. Numerous studies have been undertaken in recognition that the fragmented nature of the EDI was inefficient and rationalisation of the distributors was necessary and
the following steps were undertaken (http://www.ediholdings.co.za/27/06/2008): -

- Various studies and investigations into the EDI have undertaken. These studies all demonstrated that in order to make the EDI more efficient, there was a need to introduce economies of scale, tariffs to be rationalised, and many collapsing local authority distributors to be rescued and that a national solution to EDI restructuring was necessary. Accordingly, government initiated a process called the National Electrification Forum (NELF), which commenced in 1992, to put in place a new better EDI structure, that would be able to meet the country’s needs;

- These debates culminated into a plan that was conceptualised over a long period following and exhaustive consultation process. The plan included the merger of the municipal electricity distributors with the Eskom’s national distribution business to form a limited number of regional electricity distributors;

- The Electricity Restructuring Interdepartmental Committee (ERIC) was tasked with developing a government position on the restructuring of the EDI and completed its report in 1996. Based upon the report, the Department of Minerals and Energy (DME) submitted a memorandum to the Cabinet in 1997 that recommended, the electricity distribution industry should be consolidated into the maximum number of financially viable and independent Regional Electricity Distributors (REDs), and cost-effective tariffs, an electrification levy, and a capped tax for part funding of municipal services should be introduced.

The findings and recommendations of the ERIC Report were subsequently confirmed and elaborated upon in the Energy White Paper of 1998.
In June 1997, Cabinet also approved the EDI Holdings model as the transitional mechanism that would take the EDI from its current to an end state of viable and independent REDs. Cabinet further approved that a Ministerial Subcommittee (MSC) be created and be assisted by its technical arm – the Electricity Distribution Industry Restructuring Committee (EDIRC), to oversee this process and the following events took place:

- In 1999 the Cabinet approved the transitional process to move the industry to the RED structure. The EDIRC was established with the objective of developing proposals and recommendations to implement the Cabinet resolutions of moving the industry to the RED structure;

- The committee was a representation of the following critical stakeholders, namely Department of Minerals and Energy, National Energy Regulator, Department of Provincial and Local Government, Department of Public Enterprise, Department of Finance, Department of Trade and Industry, Department of Labour and the Technical MINMEC Provincial and Local Government;

- In April 2000, the Ministerial subcommittee approved the appointment of a consortium led by PriceWaterCoopers to advise on the reform of the South African EDI. The mandate of the consortium was to advise and make recommendations on the EDI Restructuring Strategy and the Blueprint, holding company implementation plan and RED formation plan;

- In August 2000 the Blueprint Report was approved by EDIRC;

- In May 2001, Blueprint Report was approved by Cabinet of South African parliament as a way forward on restructuring of the EDI. The Cabinet Decision included the; acceptance of the RED model as both the government’s policy direction and the end state model for the
restructuring of the EDI; endorsement of the thrust of the revised EDI restructuring report; approval of the EDI implementation plans especially the establishment of the Company with the timeframes; notation of work in progress regarding the EDI restructuring;

- The restructuring objectives as set out in the Blueprint Report are to provide low cost electricity to all consumers, with equitable tariffs for each customer segment; to provide a reliable and high quality supply and service to all customers, in support of the Government economic and social development goals; to meet the country’s electrification targets in the most cost effective manner, and so ensure that electrification is contributing to social and economic development; to meet the legitimate employment, economic and social interests of all employees in the sector, and ensure their sector; and to operate in a financially sound and efficient manner, in order to provide a reliable and sustainable future for both consumers and employees;

- In March 2003, Electricity Distribution Industry Holdings (Pty) Ltd was incorporated by the Department of Minerals and Energy for the sole purpose of facilitating the restructuring of the National Electricity Distribution Industry (EDI) in accordance with the requirements of the Energy White Paper and subsequent Cabinet decisions in this regard. It became operational in July 2003;

- RED 1 commenced operations on 1 July 2005, in line with Presidential deadline. The area of supply consisted of the area of jurisdiction of the City of Cape Town. A Service Delivery Agreement was signed between RED1 and the City of Cape Town and Operating Agreements were in place between the RED, City of Cape Town and Eskom (RED 1 license was later revoked by NERSA, presently in the process of resuscitation);
➢ The Cabinet decision taken on 14 September 2005 recommended that:
Six Metro REDs be created after Local Government Elections (1 March 2006);

➢ A modelling exercise be conducted within six moths, to determine the feasibility of creating a National RED, its viability and sustainability, organizational structure and governance arrangements;

➢ Based on the modelling results, make recommendations on the best model to achieve the objectives of restructuring and to optimise service delivery;

➢ By no later than 30 June 2006, agree on a framework for the transfer of assets, liabilities and staff from Eskom taking into account the impact on Eskom’s finances;

➢ A restructuring legislation be introduced to provide the legislative framework for RED formation and to remove the risk of the currently open-ended process;

➢ On 25 October 2005, Cabinet, having considered technical submission on the financial viability of the different RED models; the institutional and governance arrangements for the REDs; and how the various models respond to the restructuring policy objectives;

➢ The cabinet approved that the six wall-to-wall REDs be implemented; that the REDs be established as public entities and be regulated according to the PFMA and the Electricity Regulation Act; that Eskom becomes a shareholder in the respective REDs for a transitional period and that they reduce their shareholding over time; that DME, through EDI Holdings, will oversee and control the REDs; that a roadmap will be put in place to move from the current scenario into the future industry structure; that a strategy needs to be developed to deal with
capital investment requirements for the REDs; that EDI Restructuring legislation will be introduced; and that a National Electricity Pricing System will be developed;

- Key consideration and implementation enablers were governance of the REDs; promulgation of Asset Transfer Framework to enable effective and orderly transfer of assets from local government and Eskom to the REDs; national Tariff Harmonisation Framework to ensure rationalisation of tariffs nationally; infrastructure Investment Strategy; salary Harmonisation Framework; surcharge principles; consolidation of RED 1 in the Western Cape to ensure that the pilot is a success (http://www.ediholdings.co.za/31/07/2008).

Figure 4.2 Wall-to-Wall REDs boundary map

Source: EDI maintenance summit presentation - 2008
4.2.2 Model for electricity delivery in South Africa

Figure 4.2 shows the wall-to-wall REDs boundary map in South Africa’s EDI. There are six Regional Electricity Distributors spread out the country to cover all customers within the country, this structure is not duplicating the nine provincial boundaries and is also combining municipal jurisdictions that cut across provincial boundaries. RED 1 is anchored by City of Cape Town; Ekurhuleni Metropolitan Municipality anchors RED 2; Nelson Mandela Bay Metropolitan Municipality anchors RED 3; Johannesburg Metropolitan Municipality anchors RED 4; RED 5 is anchored by eThekwini Metropolitan Municipality and lastly Tshwane Metropolitan Municipality anchors RED 6.

EDIRC first considered the appropriate number and boundaries of the new REDs taking into account the White Paper’s objectives for reform and the key criteria by which RED configurations should be assessed. It concluded that six REDs should be established with the objective set by Energy White Paper that is to create maximum number of financially viable REDs to ensure that the future EDI is one that can deliver the best possible quality and cost of service to final customers. In its view financial viability should be judged against four key parameters of size, balance implementation costs and financial independence (Blueprint Report, 2001:18).

According to Blueprint Report (2001:18) the underlying boundary rationale is size to ensure economies of scale, benchmarking, and critical mass; balance for urban/rural customers and rural electrification; implementation costs that do not violate significant geographical boundaries/features and minimization of network re-configuration requirements; and financial viability for each RED so as to be able to fund their on-going operations and be able to earn a reasonable return on equity on the business, at prices which reflect efficient levels of underlying supply cost. According to Nzimande (2008:7) the principal legal instruments, which will govern the operation of a RED when established, will be the following prescripts: -
- Public Finance Management Act will regulate governance and financial management public and state owned entities;

- Companies Act, will regulate governance of companies as well as other aspects of running companies;

- Shareholders agreement, to regulate the relationship between shareholders;

- King II Report, for sound corporate governance guidelines for boards;

- Service Delivery Agreements, to regulate the provision of electricity reticulation services by a RED on behalf of a municipality;

- National Energy Regulator of South Africa’s Distribution License, to regulate the operation of networks, tariffs quality of supply and customer management.

Cabinet approval of the creation of six wall-to-wall REDS was welcomed by EDI Holdings (Nzimande, 2008:1) and said the Cabinet decision removes any uncertainty which may have existed for quite some time over the role and character of regional distributors, and will indeed go a long way in speeding up the process of RED creation in the six major metropolitan centres as the first phase and later across the entire country.

According to Mogodiri (2006:1) the South African Local Government Association (SALGA) outlined that the SALGA National Executive Committee supports the initiative to establish six wall-to-wall REDs as this will bring to an end the fragmentation that leads to inefficiencies in the industry as is presently. This move will also assist in addressing the network maintenance backlog and promote equal treatment of consumers countrywide through a national electricity pricing system. The REDs will also assist in the acceleration of the national electrification programme that ensures sustainable, affordable
electricity supply to low-income consumers, regardless of location. These efforts will ensure universal access to electricity for all South Africans.

The statement further indicated that, moreover, municipalities are to become shareholders in these entities and this therefore means there will be no loss of one of the major revenue streams for municipalities. Municipalities are to remain service authorities whilst the REDs become service providers that among other functions collect surpluses on behalf of municipalities and pay them over. It is envisaged that this relationship will be governed through a Service Delivery Agreement. The REDs will be established as Public Entities and be governed through the Public Finance Management Act.

**Figure 4.3 Strategic Implementation Plan**

<table>
<thead>
<tr>
<th>Key Question</th>
<th>Answer</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>**What is our</td>
<td><strong>EDI Restructuring</strong></td>
<td>Internal Goals for EDI&lt;br&gt;End-state of six wall-to-wall REDs&lt;br&gt;Overall</td>
</tr>
<tr>
<td>Destination?**</td>
<td><strong>Transition Path</strong></td>
<td>High level description of a staged Transition Path&lt;br&gt;Key decision</td>
</tr>
<tr>
<td>**How will we</td>
<td><strong>The Deal</strong></td>
<td>Preliminary list of 23 issues of “The Deal”&lt;br&gt;Point of view on how</td>
</tr>
<tr>
<td>get there?**</td>
<td><strong>Conditions for Success?</strong></td>
<td>to develop “The Deal”, based on analyses across the 23 issues&lt;br&gt;Codification tools and sequence of codification to implement “The Deal”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** EDI maintenance summit presentation – 2008

**4.2.3 Strategic implementation plan overview with a focus on national goals**

Figure 4.3 shows the strategic implementation plan overview focusing on national goals where key questions in the process of EDI restructuring were asked to prepare forward planning programme.
Figure 4.3 shows the first question, what is our destination? The answer provided was to fulfil the national goals for EDI restructuring through consolidating the South African electricity distribution industry into six financially viable Regional Electricity Distributors as an end-state model of six wall-to-wall REDs.

Figure 4.3 shows the content wherein the national goals are defined; formulation of electricity distribution industry scorecard through translating national goals into metrics and targets; RED design and positioning in industry value chain with clearly defined oversight role during transition and end state.

Figure 4.3 shows a second question, how will we get there? The transition path assumes a voluntarily restructuring mode and high level of uncertainties for mitigating risks. The content was the high level description of a staged transition path and key decisions taken en route to end-state model.

Figure 4.3 shows a third question, what are the conditions for success? The deal framework provided the agreement from asset owners and national government on preliminary list of 23 issues and also legislative framework and codification to cement agreements.

The deal framework was dealt with in the following section where point of view on how to develop the deal, based on analysis across the 23 issues, codification tools and sequence of codification to implement the deal.

4.2.4 Deal framework for preparation of guiding principles

Figure 4.4 shows the proposed deal framework for the preparation of guiding principles that still needed to be developed and agreed with stakeholders.
Figure 4.4 shows that the EDI Holdings remains the facilitator for the establishment of the deal on a host of various issues including amongst others the compensation of assets or conditions of transfer thereof. Influential shareholders are required to participate in REDs as shareholders that will positively ensure speedy establishment through provision of means and resources available in their disposal. The legislative environment is within the deal framework.

Source: EDI maintenance summit presentation – 2008:

Guiding principles are still to be developed and agreed with stakeholders.
4.2.5 Policy environment conducive for RED establishment

According to Nzimande (2008:20) to help fast track restructuring, and recognising that the Department of Minerals and Energy has made significant advances in the drafting of the RED Establishment Bill, the promulgation of the Bill has to be speeded up. The Deal, which is the project to quantify various policy options relating to asset evaluation, compensation, and impact analysis, is progressing well.

The Asset Transfer Framework for Municipalities has been issued by National Treasury as an exemption from section 14 of the Municipal Finance Management Act 2003 (Act No 56 of 2003) in April 2007 to facilitate transfer of assets from local government as a shareholder. The National Treasury has already prepared draft regulations for Asset Transfer in terms of section 14 of the Municipal Finance Management Act, 2003 (Act No 56 of 2003).

The Municipal Fiscal Power and Functions Act, 2007 (Act No 12 of 2007) was passed in September 2007 and will, amongst others, legislate the municipal surcharge; supporting regulations need to be accelerated. The finality of these policy/legal instruments will go a long way in accelerating RED creation.

4.2.6 Ringfencing for RED establishment

According to Transformer (2008:9), accession to cooperative agreement so far, 123 out of total of 187 municipalities in South Africa have signed the Accession to Cooperative Agreement. The Ikwezi Municipality, which falls under the jurisdiction of RED THREE was the 123rd municipality and signed the agreement on 23 May 2008. There is now a concerted effort to accelerate the signing of the agreements by the remaining 64 municipalities.

The Infrastructure, Engineering and Energy Committee of the Nelson Mandela Bay Municipality, at its meeting held on 15 February 2005 resolved that the Municipal Manager on behalf of the Nelson Mandela Metropolitan Municipality
be authorised to sign the Accession Agreement for the Council’s admittance as a new party to the Co-operative Agreement and that the Nelson Mandela Metropolitan Municipality fully participate in Electricity Distribution Industry restructuring to protect the Metro’s interest.

In terms of section 78 of Local Government: Municipal Systems Act of 2000 (Act No 32 of 200) provides a criteria and process for deciding on mechanisms to provide municipal services when a municipality has in terms of section 77 of the same Act to decide on a mechanism to provide a municipal service in the municipality of part of the municipality, or to review any existing mechanism.

According to the Transformer (2008: 9) three out of six metropolitan municipalities and 16 other municipalities have completed the process of complying with Municipal Systems Act section 78 processes requirements. The Tshwane, Nelson Mandela Bay Municipality and Johannesburg metropolitan municipalities are still conducting the process.

Ringfencing is the initial step to the process of RED creation, during which the electricity distribution business is separated from the parent municipality and result in the creation of separately operational entity (SOE). Electricity distribution business consists of wires activities, retail activities and functional support activities. Eskom has completed the ringfencing exercise while four out of six metropolitan municipalities and 13 other municipalities have completed the ringfencing process; Nelson Mandela Bay Municipality is in the process to finalise the ringfencing exercise having procured the services of PriceWaterCoopers consulting company (Transformer, 2008: 9).

According to Nzimande (2008:15) key progress to date is the realignment of the regional project governance structures to ensure broader participation by all municipalities in line with the six wall-to-wall Cabinet decisions. In all RED establishment areas the following has been established, the Sponsors Committees, Steering Committees, Regional Engagement Forums and Regional Transitional Labour Relations Structures. Eskom has successfully
implemented the ringfencing programme, internally known as 726 programme (ringfencing Eskom from seven distribution business regions to six ring fenced distribution businesses). The Transitional Labour Relations Structure has adopted Transfer Agreement and Placement & Migration Agreements. An amount of R1.2 billion has been allocated for restructuring for a three-year period through the Multi Year Price Determination and is being disbursed to ensure readiness.

4.2.7 Minimum deliverables required for establishing a RED

According to Transformer (2007:10) put simply, RED DAY ONE refers to a situation where a newly formed regional electricity distribution entity meets the established minimum deliverables required for it to be declared a Regional Electricity Distributor (RED), in line with the RED Business Model and also satisfying the key milestones that constitutes the RED establishment journey. For RED DAY ONE to be declared in a particular instance, the following must be in place as agreed to by stakeholders: -

- Legislative compliance;

- RED company registered as Public Entity and in terms of The Companies Act, 1973 (Act No. 61 of 1973);

- Minimum number of RED Board of Directors appointed;

- RED Chief Executive Officer appointed / seconded;

- RED Board and RED Management take accountability for transferred business decisions as from date of appointment and date of business transfer not coincide;

- RED to have NERSA distribution license issued for the RED area of jurisdiction of the business;
Electricity Distribution Business, constituting a critical mass, transferred to the RED;

Service Delivery Agreement as per the Local Government: Municipal Systems Act 2000 (Act No. 32 of 2000);

RED to enter into Service Level Agreements/Commercial Contracts with Eskom Holdings and Metro/Municipality Council for Shared Services;

RED 3-Year Business Plan (Transformer (2007:10)).

It is important to note that while RED DAY ONE may be declared on a specific day, it is still a process in which candidates to the relevant REDs must move into the relevant RED in a sequenced manner. The businesses that are identified to be transferred from RED DAY ONE must provide a critical mass; in other words 70 percent or more of the total sales and associated networks must constitute a significant RED geographical footprint (Transformer, 2007:11).

4.3 CONCLUSION

Chapter four reviewed the electricity distribution industry restructuring historical context in South Africa. The general trend is that the electricity departments receive instructions from their parent municipalities to perform other functions unrelated to the provision of the core electricity business, that resulted in the end-user also not receiving the quality service from the current electricity departments of the various municipalities, RED establishment should therefore begin to focus in their activities on electricity distribution once they are separated and ringfenced.

Ring fencing is the critical step in the RED creation process since it separates cost drivers of the business, revenue streams, liabilities, assets, resources and
critical business resources that are regarded as shared services with other departments of the municipality.

At present the EDI in South Africa has more than 2 000 different regimes of tariffs that are applied through different methodologies by Eskom distribution division and the 187 licensed municipalities. The result of the RED establishment and a drive to harmonise the national tariff structures will result in standard tariff methodologies for revenue requirements, tariff categories, service categories and tariff structure and components.

The South Africa EDI has been clearly depicted by operations that are very much fragmented, it is through consolidating the South African electricity distribution industry into six financially viable Regional Electricity Distributors as an end-state model of six wall-to-wall REDs that will yield results towards unitary model for the country ‘s dire need for reliable quality electricity provision to end-users.

Chapter five will deal with the description of research methodology and research instruments of this analytical study in more detail that will involve the techniques of data collection.
CHAPTER FIVE
RESEARCH METHODOLOGY AND DESIGN

5.1 INTRODUCTION

The main problem, which this study aims to address, is the assessment of the influence of the electricity distribution restructuring on the Nelson Mandela Bay Municipality.

The research main problem was subdivided into sub-problems as follows:

- What are the financial implications to NMBM due to transfer of electricity services to the REDs?

- How can the legitimate employment, economic and social interests of employees be protected during the electricity services restructuring at NMBM?

- How can the implementation of the RED model at NMBM be communicated to minimise resistance to change?

- What are the consequences of full participation of NMBM in the process of establishing the proposed end-state model, REDs?

Addressing the sub-problem questions, on how can the legitimate employment, economic and social interests of employees are protected during the electricity services restructuring at NMBM. This sub-problem has been dealt with in chapter two on privatisation of public utilities. The second sup-problem, what are the financial implications to NMBM due to transfer of electricity services to the REDs, has been dealt with during the literature review on chapter three that highlighted the state of electricity in South Africa and historical context of EDI restructuring in South Africa.
Third and fourth sub-problem questions, on how can the implementation of the model be communicated to minimise resistance to change and what are the consequences of full participation of NMBM in the process of establishing the proposed end-state model, REDs, are dealt with during the analysis of the data in chapter six.

This research study has two parts. The first part of the research study was to conduct review of scholarly literature and specific ESI literature related to South African context. The second part of the research study is the examination of results relatively to the sub-problems.

In an attempt to resolve the abovementioned sub-problems, a resolve on the use of survey research method to address the main problem statement of this research study was taken due to the fact that the use of employee attitude surveys is becoming increasingly common, both as a method of research across various social disciplines and also as a practical technique of human resource management. Yet, while there are numerous articles, books and manuals on the technical aspects of conducting such surveys, there is relatively little contemporary theory about why public service organisations conduct surveys or the extent to which they are organisational change interventions (Hartley, 2001:184).

According to Rossi and Freeman (1982:90) a survey is a systematic collection of information from large study groups, usually by means of interviews or questionnaires administered to samples of units in the population. It is a system for collecting information to describe, compare, or explain knowledge, attitudes and behaviour (Fink, 1995:1).

Both descriptive definitions were applied in the systematic investigations of this research study.
5.2 TYPES OF BUSINESS RESEARCH

According to Sekaran (2000:7) research can be undertaken for two different purposes, one is to solve a current problem faced by the manager in the work setting, demanding a timely solution. Such a research is called applied research. The other research is known as the basic research, also known as fundamental research, is used to compile knowledge and to develop a deeper understanding of common organisational problems and then to utilise this knowledge to resolve these problems.

Figure 5.1 Research designs that involves a series of decision-making

Source: Sekaran, 2003:117
Figure 5.1 shows the various rational decision-making choices ranging from observation, preliminary data gathering, problem definition, theoretical framework and generation of hypothesis. Chapters one until four have already covered all these decision-making choices. Chapter five deals with the scientific research design. Chapter six deals with data collection, analysis, and interpretation, deduction and report writing. Chapter seven deals with the presentation of report and recommendations.

The sequence of steps in the research process is based on number of models from the existing literature and such a sequence is elaborated by various industry experts after which suggests contributions in order to enhance its applicability to real world problems (Neves, Zuurbier & Campomar, 2001:518).

5.2.1 Research paradigms

According to Collis and Hussey (2003:46) the term paradigm refers to the progress of scientific practice based on people’s philosophies and assumptions about the world and the nature of knowledge; in this context, about how research should be conducted, and further quotes (Kuhn, 1962: viii) that paradigms are ‘universally recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners’.

5.2.2 Scientific paradigms

Perry (1998:785), from the case study of methodology for postgraduate research in marketing stated that there are two major approaches to theory development, deductive theory testing and inductive theory building. The difference between the two approaches can be viewed in terms of scientific paradigms, with the deductive approach representing the positivist paradigm and the inductive approach representing the phenomenological paradigm.
Table 5.1 A three dimensional framework for categorizing four scientific paradigms

<table>
<thead>
<tr>
<th>PARADIGM</th>
<th>DEDUCTION/INDUCTION</th>
<th>DIMENSION</th>
<th>COMMENSURABLE/INCOMMENSURABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivism</td>
<td>Deduction</td>
<td>Objective</td>
<td>Commensurable</td>
</tr>
<tr>
<td>Critical theory</td>
<td>Induction</td>
<td>Subjective</td>
<td>Commensurable</td>
</tr>
<tr>
<td>Constructivism</td>
<td>Induction</td>
<td>Subjective</td>
<td>Incommensurable</td>
</tr>
<tr>
<td>Realism</td>
<td>Induction</td>
<td>Objective</td>
<td>Commensurable</td>
</tr>
</tbody>
</table>

Source: Perry, 1998:785

Table 5.1 is a conceptual schema of the four paradigms, using three columns that allow the evaluation of each paradigm for case study research. According to Perry (1998:786) the difference between the two approaches can be viewed in terms of scientific paradigms, with the deductive approach representing the phenomenological paradigm, the phenomenological paradigm can be divided into three: critical theory, constructivism and realism.

5.2.2.1 Positivistic paradigm

The positivistic approach seeks the facts or causes of social phenomena, with little regard to the subjective state of the individual. Thus, logical reasoning is applied to the research so that precision, objectivity and rigour replace hunches, experience and intuition as the means of investigating research problems. It is based on the assumption that social reality is independent of us and exists regardless of whether we are aware of it (Collis & Hussey, 2003:52). Positivists believe that natural and social sciences are composed of a set of specific methods for trying to discover and measure to apprehend reality, which is assumed to exist, driven by natural laws and mechanisms (Riege, 2003:77). This paradigm was utilised for this research study.

5.2.2.2 Phenomenological paradigm

According to Collis & Hussey (2003:53), the phenomenology is the science of phenomena. A phenomenon is a fact or occurrence that appears or is
perceived, especially one of which the cause is in question. Therefore, the phenomenological paradigm is concerned with understanding human behaviour from the participant ‘s own frame of reference.

5.2.2.3 **Dimensions of positivistic and phenomenological paradigms**

Table 5.1 refers to the dimensions of deduction/induction, subjective/objective and commensurable/incommensurable. Realism is not the preferred paradigm for this research study and the following reasons supports that in favour of positivism paradigm against realism paradigm.

- Firstly, the research study areas are modern and pre-paradigmatic, that is, the research areas usually require inductive theory building for deduction from already existing principles of a paradigm is likely to be difficult where accepted principles and constructs have not been established or are clearly inadequate (Perry, 1998:787).

- Secondly, Perry (1998:787) quotes Hunt (1991) & Tsoukas (1989) that realism does not suffer from the limitations of relativism that constructivism and critical theory do, for realism is often characterised by some researcher objectivity. That is, it holds that there is an external reality, although the complexity of that reality and the limitations of a researcher ‘s mental capacity makes triangulation of data essential to refine fallible observations of that reality.

- Thirdly, according to Perry (1998:787), the case study researchers expect that their knowledge claims can and will be evaluated through some common measures, like reliability and validity issues, careful evaluation of research topic and methodology, and through review by examiners. This commensurability is not the appropriate scientific paradigm for this research study.
The survey research is a non-experimental and descriptive method, appropriateness of positivistic paradigm is correct, as cause-and-effect paths are required to solve the main research problem.

5.2.3 Deduction and induction dimensions

Figure 5.1 describes positivism as being in deduction dimension whilst the critical theory, constructivism and realism are shown in the induction dimension.

According to Glasser and Strauss (1987:253) the practice is difficult to ignore the theory accrued in one’s mind before commencing the research process. That is, common prior knowledge gained through the process of socialisation will inevitable influence the researcher’s formulation of the hypothesis. Manicas (1989:194) further states that the researcher should refrain from the uncritical appropriation of this reserve of ideas. Thus, starting from scratch with an absolutely clean theoretical slate is neither practical nor preferred.

According to Richards (1993:40) it is unlikely that any researcher could genuinely separate the two processes of induction and deduction as both prior theory and theory emerging from the data, are always involved, often simultaneously and that it is impossible to go theory-free into any study.

Whilst every attempt would have been made, in pursuance of positivistic approach with the deduction dimension during this research study, the mix of induction and deduction could be encountered.

5.2.4 Research purpose and strategy

According to Collis and Hussey (2003:10) the classification of research is done according to its purpose and could be described differently. There
are four different types of research and are examined below in order of their increasing sophistication.

- **Exploratory research** is conducted into a research problem or issue when there are very few or no earlier studies to which we can refer for information about the issue or problem. The aim of this type of study is to look for patterns, ideas or hypotheses, rather than testing or confirming a hypothesis;

- **Descriptive research** is a research that describes phenomena, as they exist. It is used to identify and obtain information on the characteristics of a particular problem or issue;

- **Analytical or explanatory research** is a continuation of descriptive research. The researcher goes beyond merely describing the characteristics, to analysing and explaining why or how it is happening. Thus, analytic research aims to understand phenomena by discovering and measuring causal relations among them;

- **Predictive research** goes even further than explanatory research. The former establishes an explanation for what is happening in a particular situation, whereas the latter forecasts the likelihood of a similar situation occurring elsewhere. Predictive research aims to generalise from the analysis by predicting certain phenomena on the basis of hypothesised, general relationships.

Sekaran (2003:27) provides a different view on the primary methods of scientific investigation and states that the deduction is the process by which we arrive at a reasoned conclusion by logical generalisation of a known fact.

This research study has combined all the four-research types classification in their order of sophistication except the predictive research, namely exploratory, descriptive, and analytical or explanatory researches with a further inclusion of
deductive research. The exploratory research has been already addressed through the literature review in chapter two and three. Descriptive research has been also addressed in the literature review in chapter four, where the identification of the information on the characteristics of a problem in South Africa ‘s EDI has been done. The compilation of data through questionnaires to address fully the analytical and deductive researches will be done when conducting the survey method of research and strategy to be employed.

5.2.5 Positivistic methodologies

The type of methodology chosen should reflect the assumptions of the research paradigm. However, some methodologies can be used under either a positivistic or a phenomenological paradigm, depending on the assumptions of the researcher, in this research study, researcher ‘s assumption focus on two methodologies as described by Collis and Hussey (2003:60): -

- Cross-sectional studies are positivistic methodologies designed to obtain information on variables in different contexts, but at the same time. Studies are conducted when there are constraints of time or resources. Thus, cross-sectional studies take a snapshot of an on-going situation;

- Longitudinal study is a study, over time of a variable or group of subjects. The aim is to research, the dynamics of the problem by investigating the same situation or people several times, or continuously, over the period in which the problem runs its course. This is often many years.

The researcher of this study took a conscious decision based on time and duration of the study and cross-sectional methodology was chosen as it seeks to obtain information on variables in different contexts, but at the same time takes a snapshot of an on-going situation as it is applicable in the EDI restructuring process of establishing the RED model.
5.2.6 Collection of research data

According to Sekaran, (2003:219 & 223) data can be obtained from primary or secondary sources. Primary data refer to information obtained firsthand by the researcher on the variables of interest for the specific purpose of the study. Secondary data refer to information gathered from sources already existing. Data can be collected in a variety of ways, in different settings and includes the following: -

- **Interviews:** Structured interviews are those conducted when it is known at the outset what information is needed and the interviewer has a list of predetermined questions to be asked of the respondents either personally, through the telephone, or through the medium of personal computers (PCs);

- **Questionnaires:** Pre-formulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives. Questionnaires are an efficient data collection mechanism when the researcher knows exactly what is required and how to measure the variables of interest. Questionnaires can be administered personally, mailed to the respondents or electronically distributed.

This research study used questionnaire as data collection method as it is the quantitative measure and suitable for the survey method of research.

5.2.7 Questionnaire as a primary data collection method

According to Collis and Hussey (2003:173) a questionnaire is a list of carefully structured questions, chosen after considerable testing, with a view to eliciting reliable responses from a chosen sample. The aim is to find out what a selected group of participants do, think or feel. This was used to gauge the feeling and thinking of the participants on the EDI restructuring.
Under a positivistic paradigm questionnaires can be used for large-scale surveys. Each question can be computer processed for ease of analysis. A positivistic approach suggests that closed questions should be used, whereas a phenomenological approach suggests open-ended questions (Collis & Hussey, 2003:173). It is necessary to design questionnaire effectively, the following guidelines have been followed in questionnaire design.

5.2.7.1 Questionnaire design

Sekaran (2003:237) writes that sound questionnaire design principles should focus on three areas. The first relates to the wording of the questions. The second refers to planning of issues of how the variables will be categorised, scaled, and coded after receipt of the response. The third pertains to the general appearance of the questionnaire. All three are important issues in questionnaire design because they can minimize biases in research.

- **Principles of wording:** The principles of wording refer to such factors as the appropriateness of the content of the questions; how questions are worded and level of sophistication of the language used; the type and form of questions asked; the sequencing of the questions, and the personal data sought from the respondents;

- **Once data are obtained, the “goodness of data” is assessed through tests of validity and reliability. Validity establishes how well a technique, instrument, or process measures a particular concept, and reliability indicates how stably and consistently the instrument taps the variable;**

- **An attractive and neat questionnaire with appropriate introduction, instructions, and well-arrayed set of questions and response alternatives will make it easier for the respondents to answer them.**

A sample of the questionnaire is appended as in Appendix 5.3.
5.2.7.2 Open-ended and closed questions usage

Collis and Hussey (2003:179) writes that questions may be described as open-ended, where each respondent can give a personal response or opinion in his or her own words. Other questions can be described as closed, where the respondents’ answer is selected from a number of predetermined alternatives. Thus factual questions are likely to be closed questions, whereas questions, which seek opinions, are likely to be open-ended in a focus group or interview but closed in a questionnaire survey.

According to Sekaran (2003:239) a closed question, in contrast, would ask the respondents to make choices among a set of alternatives given by the researcher. They also help the researcher to code the information easily for subsequent analysis. The open-ended questions allow respondents to answer them in any way they choose.

5.2.7.3 Usage of rating scale

The Likert scale turns the question into a statement and asks the respondent to indicate their level of agreement with the statement by ticking a box or circling a response (Collis & Hussey, 2003:184). The five-point Likert scale was utilised in this research study in the closed questions.

The Likert scale questionnaire is attached as Appendix 5.3 and consists of four sections as outlined here below.

Section A of the questionnaire (refer to Appendix 5.3) consisted of biographical details questions about each respondent. Researchers who prefer to elicit most of the personal information at the very beginning may opine that once respondents have shared some of their personal history, they may have psychologically identified themselves with the questionnaire, and may have feel a commitment to respond (Sekaran, 2003:243).
Section B of the questionnaire (refer to Appendix 5.3) consisted of the questions that relate to the financial implications to NMBM due to transfer of electricity services to the new RED structure.

Section C of the questionnaire (refer to Appendix 5.3) consisted of the questions that relate to legitimate employment, economic and social interests of employees that have to be protected during the electricity services restructuring at NMBM.

Section D of the questionnaires (refer to Appendix 5.3) consisted of the questions that relate to the implementation of the model, RED structure, and what are the gaps in that could be identified in the communication of the restructuring process so that resistance to change could be minimised.

Section E of the questionnaire (refer to Appendix 5.3) was dealing with the benefits that could be accrued as a result of NMBM fully participating in the process of establishing the proposed end-state model of REDs, in the Eastern Cape RED Three region.

5.2.7.4 Pre-testing of the structured questions

It is important to pre-test the instrument to ensure that the respondents understand the questions and that there are no problems with the wording or measurement. Pre-testing involves the use of a small number of respondents to test the appropriateness of the questions and their comprehension. This helps to rectify any inadequacies, in time, before administering the instrument orally or through a questionnaire to respondents, and thus reduce biases (Sekaran, 2003:249).

Appendix 5.1 is a letter to the pre-test participants that are reflective of the sample population that represents the target population. The composition of the pre-test participants was industry expert, academic staff and small number of future target population in a form of colleagues.
Appendix 5.2 is a letter to the participants within the target group of the senior management team members that have been pre-identified to participate in the research study.

5.2.8 Validity and reliability measurement

According to Leedy (1993:40) validity is concerned with the soundness, the effectiveness of the measuring instrument. Collis and Hussey (2003:58) write that validity is the extent to which the research findings accurately represent what is really happening in the situation.

According to Sekaran (2003:206) several types of validity tests are used to test the goodness of measures and writers use different terms to denote them, and can be grouped for validity test under three broad headings as follows:

- Content validity that ensures that the measures includes and adequate and representative set of items that tap the concept;

- Criterion-related validity that is established when the measure differentiates individuals on a criterion it is expected to predict. Establishing concurrent validity can do this;

- Construct validity testifies to how well the results obtained from the use of the measure fit the theories around which the test is designed. This is assessed through convergent validity.

According to Leedy (1993:42) reliability deals with accuracy, questions such as, how accurate is the instrument that should be used as measurement? Reliability is concerned with the findings of the research and is one aspect of the credibility of the findings. Repeating a research study to test the reliability of the results is known as replication and is very important in positivistic studies where reliability is usually high (Collis & Hussey, 2003:58).
Both research instruments of validity and reliability are used during this research study to reflect findings that accurately represent the situation.

5.2.9 Research sample selection

Selecting a sample is a fundamental element of a positivistic study. A sample is made up of some of the members of a population. A population may refer to a body of people or to any other collection of items under consideration for research purposes (Collis & Hussey, 2003:155).

According to Collis & Hussey (2003:155) in a positivistic study a representative or good sample is one in which the results obtained for the sample can be taken to be true for the whole population; in other words, you will be able to generalise from the results. A good sample must be:

- Chosen at random (every member of the population must have a chance of being chosen);
- Large enough to satisfy the needs of the investigation being undertaken;
- Unbiased.

5.2.9.1 Sampling methodologies

According to Collis and Hussey (2003:157) stratified sampling identifies strata of the population to avoid members of the population being significantly under or over-represented. In this research study, executive directors, directors and assistant directors are targeted from each of the ten municipal directorates as they form the core group of senior management tasked with the strategic role of overseeing the successful administration of the institution.
Leedy (1993:2000) states that sampling can be divided into two major categories: -

- Non-probability sampling where there is no way of forecasting, estimating, or guaranteeing that each element in the population will be represented in the sample;

- Probability sampling where a researcher can specify in advance that each segment of the population will be represented in the sample.

Stratified sampling a probability sampling are utilised in this research study to achieve the required results of answering the main research question.

5.2.9.2 Sample size

Collis and Hussey (2003:159) state that sample size, is essentially, a question of deciding how accurate you want your results to be and how confident you want to be in that answer and further quote Clegg (1990) that there are three main considerations to bear in mind on deciding on sample size: -

- The kind of statistical analysis which is planned;

- The expected variability within the samples and the results, based on experience (the greater the expected variation, the larger the sample);

- The traditions in your particular research area regarding appropriate sample size.

In this research study, 46 top management team, ranging from executive directors (head of departments), directors (second in charge) and assistant directors were a good sample for the ten different directorates of the NMBM. Their level of seniority and understanding of the bigger picture of the situation is of great importance to achieve good input in a form of responses.
5.2.10 Ethics

According Kervin (1992:38) your own ethical position will help you determine how to design your research project and the following checklist for ethical research can be a useful starting point:

- Will the research process harm participants or those about whom information is gathered (indirect participants)?

- Are the findings of this research likely to cause harm to others not involved in the research?

- Are you violating accepted research practice in conducting the research and data analysis, and drawing conclusions?

- Are you violating community standards of conduct?

All of the above points on the checklist for ethical research have been taken into consideration during this research study when conducting the survey method of research.

Collis and Hussey (2003:37) state that you will need to consider a number of different ethical issues and find out what rules there may be for conducting research at an early stage as some of the problems which can arise during the research study survey:

- The subject firm: As you may have spent some time negotiating access to an organisation in order to conduct your research, but a challenge would be when you find out the company was engaged in illegal activities;

- Confidentiality/anonymity: It is normal to offer confidentiality or anonymity to participants in a research project. This encourages them
to give more open and honest responses. However, it may present you with the problem that you receive information that you might consider should be passed on to someone else;

- Informed consent: In any research project it is ethical to inform the potential participants of the purpose of the research and to obtain their agreement to their participation. This can present problems in gaining access and obtaining valid responses;

- Dignity: In research, it would not be ethical to embarrass or ridicule participants, but unfortunately this can easily be done. The relationship between the researcher and the phenomenon being studied is often complex.

These research ethical dilemmas are taken into consideration in this research study and to avoid any deviations as the consequences could destroy all the efforts of the intended study results of answering the main research problem.

5.3 CONCLUSION

In this chapter five, the research methodology and design has been dealt with, all the components that are relevant to the research study under the methodology and research design had been covered and their relevance was highlighted.

In chapter six, a thorough analysis of techniques used to capture the results of the survey process is dealt with where full presentation is done, discussion and summarising is also done.
CHAPTER SIX

PRESENTATION AND ANALYSIS OF THE STUDY SURVEY RESULTS

6.1 INTRODUCTION

This chapter will basically demonstrate the rationale behind the techniques used for data analysis that have been obtained through the utilisation of the survey questionnaire as a research instrument at the NMBM. Further the results of the results will be presented, analysed and discussed by using data tables, charts, graphs other diagrammatic forms. The outcomes of the survey will be utilised mainly to answer the problem statement that seeks to assess the impact to NMBM due to restructuring of EDI in South Africa; each of the sections of the questionnaire will be individually presented with combined concluding remarks.

6.2 QUESTIONNAIRE CODING FOR ANALYSIS

The first item to code in any questionnaire or data record sheet is the number, which identifies the entire questionnaire or record sheet (Collis & Hussey, 2003:37).

Coding of the questionnaire at the designing stage was done for each section and subsections. Usage of a coding sheet was utilised to transcribe the data from the questionnaire and for capturing the data during the analysis stage.

6.3 DATA ANALYSIS

Confirmatory data analysis or inferential statistics, involves using quantitative data collected from a sample to draw conclusions about a complete population (Collis & Hussey, 2003:196). Suitable software of the researcher’s choice was utilised as statistical technique to conduct exploratory data analysis to summarise, describe and display the data.
Three main groups of techniques that are utilised to present the data from the survey questionnaires are:

- Presentation of frequencies;
- Measurement of central tendency;
- Measurement of dispersion.

6.3.1 Presenting frequencies

The quantitative data will take the form of numerical values, which represent the total number of observations or frequencies for the variables under study (Collis & Hussey, 2003:196). A summary of quantitative data from the sample population will be utilised to confirm data analysis or inferential statistics to draw conclusions about the total population.

6.3.2 Measuring central tendency

According to McDaniel and Gates (2008:414), the three measures of central tendency are the arithmetic mean, median, and mode.

6.3.2.1 Mean

An average is a convenient way of describing a data set by means of a single value. It involves calculating the arithmetic mean (Collis & Hussey, 2003:199). The mean is properly computed only from interval or ratio (metric) data. It is computed by adding the values for all observations for a particular variable, such as age, and dividing the resulting sum by the number of observations and get a figure (McDaniel & Gates, 2008:414).

The advantage of presenting the data in this way is that this can help you to present the overall pattern more clearly however there are problems associated with grouping data in cases of discrete or continuous data (Collis & Hussey, 2003:200).
6.3.2.2 Median

The median can be computed for all types of data except nominal data. It is calculated by finding the value below which 50 percent of the observations fall (McDaniel & Gates, 2008:414). The median is the central item in a group of observations when they are arrayed in either an ascending or a descending order (Sekaran, 2003:396).

6.3.2.3 Mode

According to McDaniel & Gates (2008:414), the mode can be computed for any type of data (nominal, ordinal, interval, or ratio). It is determined by finding the value that occurs most frequently.

6.3.3 Measuring dispersion

The measure of dispersion is unique to nominal and interval data (Sekaran, 2003:397). Frequently used measures of dispersion include standard deviation, variance, and range. Whereas measures of central tendency indicate typical values for a particular variable, measures of dispersion indicate how spread out the data are (McDaniel & Gates, 2008:414).

According to Sekaran (2003:397), the three measurements of dispersion connected with the mean are the range, the variance, and the standard deviation, which are explained below:

- Range: Range refers to the extreme values in a set of observations;
- Variance: The variance gives and indication of how dispersed the data in a data set are;
- Standard deviation: Offers and index of the spread of a distribution or the variability in the data.
6.4 TARGETED POPULATION AND SAMPLE

According to Sekaran (2003:265), population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate; a sample is a subset of the population, as it comprises some members selected from it. In this research study the NMBM top management was selected as the targeted population.

Figure 6.1 Comparison of totals of sample and population

Figure 6.1 shows the comparison of the totals of sample and population for the research study and the total number of people as a population in the top management of the NMBM equals 236; this was confirmed by payroll section of the Budget and Treasury Internal Data Payment System (2008:1)

A sample was chosen that was the subset of the population that comprised the individuals that occupied the positions of Executive Directors, Directors and assistants, from 11 directorates of the NMBM. In total the sample was 46 individuals within those categories. Stratified random sampling was utilised.

A sample as a subgroup or subset of the population was selected for studying the impact to NMBM due to restructuring of electricity services so as to be able to draw conclusions that would be generalisable to the population of interest.
Figure 6.2 shows that the response rate of this research study was 100 percent; this was enabled due to the fact that the access for conducting this research within the institution was granted by senior management.

Figure 6.2 Comparison of sample and response rate

According to Saunders, Lewis & Thornhill (2000:158), if you are collecting your sample data from a secondary source within an organisation, which has already, granted you access, your response rate should be virtually 100 percent.

6.5 ANALYSIS OF SECTION A: BIOGRAPHICAL DETAILS

According to Sekaran (2003:244), in organisational surveys, it is advisable to gather certain demographic data such as age, sex, educational level, job level, department, and number of years in the organization, even if the theoretical framework does not necessitate or include these variables.

The survey study questionnaire that was distributed to the sample of the population of the NMBM senior management team received a 100 percent response rate and yielded the following results for biographical details as depicted in table 6.1 for Section A of the questionnaire.
Table 6.1 Summary of biographic information

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>Category</th>
<th>Frequency</th>
<th>Frequency %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.1 Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Frequency</td>
<td>Frequency %</td>
<td></td>
</tr>
<tr>
<td>18 – 24</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>25 – 35</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>36 – 49</td>
<td>31</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>50 and above</td>
<td>12</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td><strong>1.2 Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Frequency</td>
<td>Frequency %</td>
<td></td>
</tr>
<tr>
<td>African</td>
<td>27</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>Coloured</td>
<td>4</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Indian</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>13</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td><strong>1.3 Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Frequency</td>
<td>Frequency %</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>39</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td><strong>1.4 Educational levels</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Frequency</td>
<td>Frequency %</td>
<td></td>
</tr>
<tr>
<td>Below grade 12 (Matric)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Matric</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>M+3 (e.g. Technikon Diploma)</td>
<td>7</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>M+4 (e.g. Bachelor Degree)</td>
<td>22</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Masters Degree</td>
<td>13</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Other – please specify</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td><strong>1.5 Employment Period</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Frequency</td>
<td>Frequency %</td>
<td></td>
</tr>
<tr>
<td>1 – 3</td>
<td>8</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>4 – 5</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>6 – 9</td>
<td>8</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>10 or more years</td>
<td>27</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
### VARIABLE

#### 1.6 Directorate

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Frequency %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Services</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Infrastructure % Development</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Electricity % Energy</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Environment &amp; Health</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Economic Development &amp; Recreational Services</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Housing &amp; Land</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Safety &amp; Security</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Budget &amp; Treasury</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Chief Operating Officer</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Chief of Staff</td>
<td>1</td>
<td>2.17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

#### 1.7 Job Status

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Frequency %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Director</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>Director</td>
<td>22</td>
<td>48</td>
</tr>
<tr>
<td>Assistant Director</td>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td>Below Assistant Director</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The personal data from the various respondents of the survey questionnaire was gathered with due regard to the sensitivity of the respondents’ feelings, and with respect for their privacy.

Figure 6.3 shows a comparison of sample and population age from the summary of the biographical details of the sample respondents and targeted population of the research study, the following is the summary:

**Sample:** Respondents of 50 years and above were 26 percent, respondents of 36 to 49 years were 67 percent, respondents of 25 to 35 years were 7 percent and there were no respondents in the ages of 18 to 24 years.

**Population:** In the top management of NMBM there were individuals within the bracket of 50 years and above that amounted to 38 percent, 36 to 49 years bracket there were 43 percent, 25 to 35 years bracket were 18 percent, and lastly only 1 percent fell within this bracket.
Figure 6.3 shows that the results of the survey indicate that the age of sample was less by 12 percent than the population on the 50 years and older bracket, higher by 24 percent on the 36 to 49 years bracket than population, less by 11 percent on the 25 to 35 years bracket than population and less by 1 percent on the 18 to 24 years bracket than population.

Both the sample respondents and the population of the top management of NMBM there was high concentration of individuals within the matured stage of 36 to 49 years that indicates a number of employees that still have a choice of remaining within the employ of the institution before reaching the retirements stage of 55 years and older.

There was a degree of correlation within the various age group brackets of both the sample respondents and the population of the top management of the NMBM.

**Figure 6.3 Comparison of sample and population age**
Figure 6.4 shows the comparison of sample and population ethnicity with the various ethnic groups under consideration and the following is the summary of representations of different groups.

**Sample:** Whites were 28 percent, Chinese were not represented, Indians were 4 percent, Coloureds were 9 percent and Africans were 59 percent.

**Population:** Whites were 22 percent, Chinese were not represented, Indians were 1 percent, and Coloureds were 15 percent and Africans 62 percent.

There was a strong degree of correlation for both the sample and population with high levels of representation of 59 percent and 62 percent respectively in the African ethnic group. Second dominant representation was the White ethnic group for both sample and population with 28 percent and 22 percent respectively.

**Figure 6.4 Comparison of sample and population ethnicity**
Figure 6.5 shows the comparison of sample and population of gender representation and the following is the summary.

**Sample:** Representation of females was 15 percent and males were 85 percent.

**Population:** Representation of females was 32 percent and males were 68 percent.

Males with high percentages of 85 and 68 percent dominate both the sample and population respectively.

The split of females and males in the population of NMBM top management was at the ratio of 68:32 whereas the split of the females and males in the sample NMBM top management is at the ratio of 85:15 and there was a degree of correlation between the population and sample gender representation.
Table 6.2 Comparison of sample and population ethnical gender

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th></th>
<th>Population</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>African</td>
<td>46%</td>
<td>13%</td>
<td>42%</td>
<td>20%</td>
</tr>
<tr>
<td>White</td>
<td>26%</td>
<td>2%</td>
<td>14%</td>
<td>7%</td>
</tr>
<tr>
<td>Chinese</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>Coloured</td>
<td>9%</td>
<td>0%</td>
<td>11%</td>
<td>4%</td>
</tr>
<tr>
<td>Indian</td>
<td>4%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Subtotals</td>
<td>85%</td>
<td>15%</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>Totals</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 6.2 shows the comparison of sample and population ethnical gender breakdown for the various ethnical groups that were in the sample respondents and the population of the top management of the NMBM.

For both the sample and population the African male were the highest in 46 and 42 percent respectively. White males followed this high representation at 26 and 14 percent for sample and population respectively. There were no Chinese male representation for both sample and population and only about 1 percent female representation in the population.

No female representation of Indians for both sample and population and was the lowest representation for males at 4 and 1 percent respectively.

Coloureds were second last for both sample and population representation on both male and female.

There was degree of correlation for both sample and population gender but uncorrelated on ethnical gender representation.
Figure 6.6 shows the educational levels of the respondents with only one person who possess a matric as a highest qualification, seven persons with M+3 (e.g. Technikon Diploma) qualification, 22 persons that posses an M+4 (Bachelor Degree), 13 persons with a masters degree qualification and three persons with doctoral qualification.

The highest number of respondents with a minimum bachelor’s degree was 48 percent and followed by 28 percent of masters’ degree qualification.

The distribution in figure 6.6 is positively skewed as it has a longer tail in the positive direction, and it is therefore skewed to the right.
Figure 6.7 Comparison of sample and population years of employment

Figure 6.7 shows comparison of sample and population years of employment for the respondents and top management of the NMBM from various directorates.

Those individuals who have been in the employ of NMBM for 10 or more years vary with huge gap in between with population less than 37 percent compared to sample. The individuals who fell on the six to nine years of service differed with population higher than sample by 6 percent. The individuals within the category of four to five years in the employ of the NMBM did not differ with huge margins with only 2 percent of sample higher than the population.

The population had extremely huge number of individuals in the new category of employees within the 1 to 3 years of service at 50 percent of the total population whereas the sample had only 17 percent within this category with the bulk situated at 10 or more years of service. There was no degree of correlation of sample and population years of employment.
Figure 6.8 shows the various statuses of the respondents of the top management of the NMBM across all the directorates that were in the sample for the research study.

There were 11 executive directors (heads of departments) from the various directorates that were respondents, 22 directors as respondents and 14 as assistant directors. There were no respondents that were below the assistant director’s level.

The directors were the highest number of respondents, being 48 percent of the respondents, followed assistant directors at 30 percent and lastly the 22 percent being executive directors.

The distribution of the job statuses of respondents would seem to be normal distribution, as it is symmetric with scores more concentrated in the middle than in the tails of either side and can be described as bell shaped.
6.6 ANALYSIS OF SECTION B: PERCEIVED FINANCIAL IMPLICATIONS

In addressing one of the subproblems, that dealt with, what are the perceived financial implications to NMBM due to transfer of electricity services to the REDs, Table 6.3 was designed to entail five internal impact statements as follows.

Table 6.3 Section B percentages of response frequency

<table>
<thead>
<tr>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One of the revenue collection mechanisms is the use of the electricity services as leverage for the collection of revenue outstanding for other services, this practice should continue after the REDs establishment.</td>
<td>54%</td>
<td>33%</td>
<td>7%</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street lighting influences safety and security of communities and currently this cost is borne by Electricity and Energy directorate, this practice should continue after the REDs establishment.</td>
<td>70%</td>
<td>26%</td>
<td>0</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A perception is that the cash flow of NMBM could be negatively affected by transferring electricity services to the RED, this would have an impact on service delivery targets and credit rating, and as such strategies to mitigate this should be in place.</td>
<td>65%</td>
<td>27%</td>
<td>0</td>
<td>8%</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asset base of each participant in the RED establishment process would be a preferred method for allocating shareholding in the new RED structure.</td>
<td>26%</td>
<td>52%</td>
<td>18%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity and Energy Directorate utilize the shared services from other directorates like billing, IT, HR and financial services, this practice should continue through Service Level Agreements between Metro and RED.</td>
<td>40%</td>
<td>41%</td>
<td>15%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

(1) Not Important
(2) Of little Importance
(3) Neither important nor Unimportant
(4) Quite Important
(5) Very Important
Table 6.3 shows an analysis of the questionnaire’s Section B. There were five internal impact statements that the respondents were required to rate from a Likert scaling of one to five to rate their agreements with each statement. Each respondent had an opportunity to indicate one answer for each statement from Not Important at a scale of one to Very Important at a scale of five at the end.

Various responses were summarised for each statement and expressed in percentage form. Measurements of each response were further combined together with measures of central tendency that includes mean, median and mode. Standard deviation and the distribution of data were also detailed hereunder.

Table 6.4 Measurement of B1, B2 and B3 for perceived financial impact

<table>
<thead>
<tr>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 One of the revenue collection mechanisms is the use of the electricity services as leverage for the collection of revenue outstanding for other services, this practice should continue after the REDs establishment.</td>
<td>54%</td>
<td>33%</td>
<td>7%</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>4.326</td>
<td>5</td>
<td>5</td>
<td>0.944</td>
<td>-2.141</td>
</tr>
<tr>
<td>2 Street lighting influences safety and security of communities and currently this cost is borne by Electricity and Energy directorate, this practice should continue after the REDs establishment.</td>
<td>70%</td>
<td>26%</td>
<td>0%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>4.587</td>
<td>5</td>
<td>5</td>
<td>0.805</td>
<td>-1.540</td>
</tr>
<tr>
<td>3 A perception is that the cash flow of NMBM could be negatively affected by transferring electricity services to the RED, this would have an impact on service delivery targets and credit rating, and as such strategies to mitigate this should be in place.</td>
<td>65%</td>
<td>26%</td>
<td>0%</td>
<td>9%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>4.478</td>
<td>5</td>
<td>5</td>
<td>0.888</td>
<td>-1.763</td>
</tr>
</tbody>
</table>

(1) Not Important  
(2) Of little Importance  
(3) Neither important nor Unimportant  
(4) Quite Important  
(5) Very Important  

Mean  
Median  
Mode  
Standard Deviation  
Skewness
Table 6.4 depicts the measurement of perceived financial internal impact to NMBM due to restructuring of electricity services to form the RED and shows the percentage of combined number of respondents for each rating in each statement.

Section B1, which tested an opinion on whether to retain the practice of utilising the electricity services as the leverage for the collection of revenue that is outstanding for other services from the NMBM customers scored 54 percent as being very important process with 33 percent in agreement that the process is quite important. Only few respondents that felt this process was neither important nor not important that were between two and seven percent.

Section B2, which tested the continuation of provision of street lighting services as a source of providing the security to communities by the EED after establishment of REDs, in which case the costs will be borne by the RED, received strong support of 70 percent as being very important and 26 percent as being quite important. Only two percent felt the issues was of little importance and not important.

Section B3, sought to solicit a perception on the cash flow of NMBM that could be negatively affected by transferring the electricity services to the RED on the service delivery targets and credit rating. There was a strong agreement that the was a need to develop strategies to mitigate any such negative outcome and 65 percent respondents agreed that such a process was very important and 26 percent felt it was quite important. Only nine percent felt the development of mitigating strategies was of little importance.

In all the Section B1, B2 and B3 there was strong support of the statements that measured the internal impact on perceived financial impact and the respondents’ answers were skewed in agreement of the statements and hence the negative skewness factor. In all the three cases, the mean is pulled to the left by the outliers and thus the mean is smaller than the median and the coefficient of skewness is negative.
Table 6.5 Measurement of B4 for perceived financial impact

<table>
<thead>
<tr>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Asset base of each participant in the RED establishment process would be a preferred method for allocating shareholding in the new RED structure.</td>
<td>26%</td>
<td>52%</td>
<td>17%</td>
<td>2%</td>
</tr>
<tr>
<td>(1) Not Important</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Of little Importance</td>
<td>Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Neither important nor Unimportant</td>
<td>Mode</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) Quite Important</td>
<td>Standard Deviation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Very Important</td>
<td>Skewness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.5 shows Section B4 as a measurement of perceived financial impact to NMBM. Respondents were required to give an opinion on whether an asset base of each participant in the RED establishment process would be a preferred method for allocating shareholding in the new RED structure. An average respondents at 52 percent felt that this method would be quite important whilst 26 percent felt it was very important and 17 percent were undecided.

The responses were not much skewed as shown by negative coefficient that was not further away from the 0. The mean was not pulled to either side by the outliers and the difference between mean and median was minimal. This statement received an average response with many respondents not fully viewing the statement as very important.

Table 6.6 Measurement of B5 for perceived financial impact

<table>
<thead>
<tr>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Electricity and Energy Directorate utilize the shared services from other directorates like billing, IT, HR and financial services, this practice should continue through Service Level Agreements between Metro and RED.</td>
<td>39%</td>
<td>41%</td>
<td>15%</td>
<td>2%</td>
</tr>
<tr>
<td>(1) Not Important</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Of little Importance</td>
<td>Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Neither important nor Unimportant</td>
<td>Mode</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) Quite Important</td>
<td>Standard Deviation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Very Important</td>
<td>Skewness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6.6 shows Section B 5 of the measurement, which sought to solicit the views of the respondents on the practice by EED to continue to utilise the shared services from other directorates like billing, IT, HR and financial services through the Service Level Agreements between Metro and the RED. This statement received lukewarm responses as 41 percent felt that the issue was quite important and 39 percent felt that it was very important. There were 15 percent respondents that were undecided on the issue and about two percent felt it was not important or of little importance. Coefficient was positive, meaning that the responses were positively skewed in their distribution. In this case the mean was pulled to the right and it was larger than the median.

6.7 ANALYSIS OF SECTION C: MEASUREMENT OF PROTECTION OF EMPLOYEE EXPECTATIONS DURING RESTRUCTURING

Table 6.7  Section C percentages of response frequency

<table>
<thead>
<tr>
<th>Internal impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Employees in my directorate were given an opportunity to give input into the restructuring of electricity services.</td>
<td>15%</td>
<td>13%</td>
<td>24%</td>
<td>13%</td>
<td>35%</td>
</tr>
<tr>
<td>2 Benefits of restructuring were discussed with affected employees in my directorate.</td>
<td>11%</td>
<td>8%</td>
<td>26%</td>
<td>22%</td>
<td>33%</td>
</tr>
<tr>
<td>3 During the introduction of operational ring fencing, all affected employees were consulted in my directorate.</td>
<td>9%</td>
<td>11%</td>
<td>24%</td>
<td>17%</td>
<td>39%</td>
</tr>
<tr>
<td>4 During the introduction of financial ring fencing, a prescriptive process as laid down by ring fencing process was followed in my directorate.</td>
<td>7%</td>
<td>15%</td>
<td>26%</td>
<td>15%</td>
<td>37%</td>
</tr>
<tr>
<td>5 During the introduction of human resources ring fencing, all employee-related activities and liabilities were discussed with affected employees in my directorate.</td>
<td>11%</td>
<td>7%</td>
<td>30%</td>
<td>20%</td>
<td>33%</td>
</tr>
</tbody>
</table>

(1) Strongly Disagree
(2) Somewhat Disagree
(3) Neither Agree Nor Disagree
(4) Somewhat Agree
(5) Strongly Agree
In addressing one of the subproblems that dealt with, how can the legitimate employment, economic and social interest of employees be protected during the restructuring at NMBM, Table 6.7 was designed to entail five internal impact statements as detailed above.

Table 6.7 shows the summary of the percentages of responses from the respondents on the statements that sought to address the subproblem on how can the legitimate employment, economic and social interest of employees be protected during the restructuring of electricity services at NMBM, was designed to entail five internal impact statements.

Table 6.7 shows an analysis of the questionnaire’s Section C. There were five internal impact statements that the respondents were required to rate from a Likert scaling of one to five to rate their agreements with each statement. Each respondent had an opportunity to indicate one answer for each statement from Strongly Disagree at a scale of one to Strongly Agree at a scale of five at the end.

Various responses were summarised for each statement and expressed in percentage form. Measurements of each response were further combined together with measures of central tendency that includes mean, median and mode. Standard deviation and the distribution of data were also detailed hereunder.

<table>
<thead>
<tr>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Employees in my directorate were given an opportunity to give input into the restructuring of electricity services.</td>
<td>15%</td>
<td>13%</td>
<td>24%</td>
<td>13%</td>
<td>35%</td>
</tr>
<tr>
<td>(1) Strongly Disagree</td>
<td>Mean</td>
<td>2.609</td>
<td>3</td>
<td>1</td>
<td>1.468</td>
</tr>
<tr>
<td>(2) Somewhat Disagree</td>
<td>Median</td>
<td>2</td>
<td>1</td>
<td>1.468</td>
<td>-0.800</td>
</tr>
<tr>
<td>(3) Neither Agree Nor Disagree</td>
<td>Mode</td>
<td>1</td>
<td>1.468</td>
<td>-0.800</td>
<td></td>
</tr>
<tr>
<td>(4) Somewhat Agree</td>
<td>Standard Deviation</td>
<td>1</td>
<td>1.468</td>
<td>-0.800</td>
<td></td>
</tr>
<tr>
<td>(5) Strongly Agree</td>
<td>Skewness</td>
<td>1</td>
<td>1.468</td>
<td>-0.800</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.8 Measurement of C1 for employee expectations
Table 6.8 shows Section C1, which measures the NMBM employee expectations. Respondents were required to indicate their experiences with within their directorates on whether they were given an opportunity to give input into the restructuring of electricity services.

Majority of the respondents, at 35 percent were strongly in disagreement that they were given an opportunity to give input on restructuring of the electricity services on NMBM and 24 percent were neither in agreement or nor disagreement with the statement. Negative coefficient was registered as the responses were skewed to the left with the mean smaller than the median.

Consultation with the broader workforce proved to have not been conducted to the satisfaction of the employees in most directorates and therefore restructuring objectives might not have received broader participatory contribution and the necessary stakeholder buy-in.

EDI Holdings and the various legacy entities have coordinated the process of restructuring the EDI in South Africa. It would seem that the communication of the restructuring objectives of the electricity services within the NMBM was not done in full scale.

Table 6.9 depicts the measurement of employee expectations as an internal impact on the morale of employees during the restructuring of electricity services at NMBM.

Table 6.9 shows Section C2 that dealt with the discussion with affected employees in various directorates on the benefits of restructuring. Respondents were in strong disagreement on this statement at 33 percent followed by 26 percent of the respondents that were neither in agreement or nor disagree with the statement.
**Table 6.9 Measurement of C2, C3, C4 and C5 for employee expectations**

<table>
<thead>
<tr>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Benefits of restructuring were discussed with affected employees in my directorate.</td>
<td>11%</td>
<td>8%</td>
<td>26%</td>
<td>22%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>2.435</td>
<td>2</td>
<td>1</td>
<td>1.328</td>
<td>0.983</td>
</tr>
<tr>
<td>3 During the introduction of operational ringfencing, all affected employees were consulted in my directorate.</td>
<td>9%</td>
<td>11%</td>
<td>24%</td>
<td>17%</td>
<td>39%</td>
</tr>
<tr>
<td></td>
<td>2.326</td>
<td>2</td>
<td>1</td>
<td>1.334</td>
<td>0.733</td>
</tr>
<tr>
<td>4 During the introduction of financial ringfencing, a prescriptive process as laid down by ringfencing process was followed in my directorate.</td>
<td>7%</td>
<td>15%</td>
<td>26%</td>
<td>15%</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>2.391</td>
<td>2</td>
<td>1</td>
<td>1.308</td>
<td>0.898</td>
</tr>
<tr>
<td>5 During the introduction of human resources ringfencing, all employee-related activities and liabilities were discussed with affected employees in my directorate.</td>
<td>11%</td>
<td>7%</td>
<td>30%</td>
<td>20%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>2.435</td>
<td>2</td>
<td>1</td>
<td>1.311</td>
<td>0.995</td>
</tr>
</tbody>
</table>

(1) Strongly Disagree  | Mean  
(2) Somewhat Disagree  | Median  
(3) Neither Agree nor Disagree  | Mode  
(4) Somewhat Agree  | Standard Deviation  
(5) Strongly Agree  | Skewness

Table 6.9 shows Section C3 that dealt with consultation with affected employees during the introduction of operational ringfencing at various directorates. Respondents were strongly in disagreement with the statement by 39 percent and 24 percent respondents were neither in agreement or nor disagreement.

Table 6.9 shows Section C4 that dealt with the consultation with affected employees during the introduction of financial ringfencing as outlined by the ringfencing toolkit. Respondents were strongly in disagreement with the statement by 37 percent and 26 percent were neither in agreement or nor disagreement.
Table 6.9 shows Section C5 that dealt with the discussion with the affected employees at various directorates during the introduction of human resources ringfencing were all employee-related activities and liabilities were tabled.

In all the above Section C2, C3, C4 and C5, the coefficient was positive, meaning that the distribution of data is skewed to the right, in all the cases the mean was pulled to the right by the outliers and thus the mean was larger than the median. Majority of respondents in each of the statements were in strong disagreement that the employee expectations were not perceived to have been protected during the restructuring of the electricity services.

6.8 ANALYSIS OF SECTION D: MEASUREMENT OF COMMUNICATION STRATEGY

In addressing one of the subproblems, that dealt with, how could the implementation of the RED model at NMBM be communicated to minimise resistance to change.

Table 6.10 was designed to entail five internal impact statements as detailed here below.

Table 6.10 shows an analysis of the questionnaire’s Section D. There were four internal impact statements that the respondents were required to rate from a Likert scaling of one to five to rate their agreements with each statement. Each respondent had an opportunity to indicate one answer for each statement from Not Important at a scale of one to Very Important at a scale of five at the end.

Various responses were summarised for each statement and expressed in percentage form. Measurements of each response were further combined together with measures of central tendency that includes mean, median and mode. Standard deviation and the distribution of data were also detailed hereunder.
Table 6.10 Section D percentages of response frequency

<table>
<thead>
<tr>
<th></th>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The vision and objectives of electricity services restructuring were clearly communicated to my directorate.</td>
<td>48%</td>
<td>26%</td>
<td>17%</td>
<td>2%</td>
<td>7%</td>
</tr>
<tr>
<td>2</td>
<td>Resistance to change to be identified and managed through a newly formed project management office of NMBM.</td>
<td>59%</td>
<td>22%</td>
<td>15%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>3</td>
<td>A need for development of change management strategy for NMBM during electricity services restructuring.</td>
<td>67%</td>
<td>26%</td>
<td>7%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>4</td>
<td>Formation of representative teams from staff members to be formed to take control of the change by explaining how transition can become seamless and positive challenge.</td>
<td>61%</td>
<td>30%</td>
<td>7%</td>
<td>2%</td>
<td>0%</td>
</tr>
</tbody>
</table>

(1) Not Important  
(2) Of little Importance  
(3) Neither important nor Unimportant  
(4) Quite Important  
(5) Very Important

Table 6.11 shows Section D1 that deals with the measurement of change management strategies as the internal impact. Communication of the vision and objectives of the restructuring of electricity services to various directorates was the statement the respondents were tasked to indicate its importance.

Section D1, respondents were just below average half mark at 48 percent that were in agreement with the statement that it was very important and followed by 26 percent that felt it was quite important that such a process still has to be done. Coefficient was positive in strong agreement with the statement with the mean slightly higher than the median.
Table 6.11 Measurement of D1 for change management strategies

<table>
<thead>
<tr>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The vision and objectives of electricity services restructuring to be clearly communicated to my directorate.</td>
<td>48%</td>
<td>26%</td>
<td>17%</td>
<td>2%</td>
</tr>
<tr>
<td>(1)</td>
<td>Not Important</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td>Of little Importance</td>
<td>Median</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td>Neither important nor Unimportant</td>
<td>Mode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>Quite Important</td>
<td>Standard Deviation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5)</td>
<td>Very Important</td>
<td>Skewness</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A concerted effort has to be undertaken for a major drive on communicating the vision and objectives of the restructuring of electricity services at NMBM to all stakeholders that are involved in the value chain, like customers, political structures, organised business and public practitioners.

Table 6.12 Measurement of D2, D3 and D4 for change management strategies

<table>
<thead>
<tr>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Resistance to change to be identified and managed through a newly formed project management office of NMBM.</td>
<td>59%</td>
<td>22%</td>
<td>15%</td>
<td>4%</td>
</tr>
<tr>
<td>(1)</td>
<td>Not Important</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td>Of little Importance</td>
<td>Median</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td>Neither important nor Unimportant</td>
<td>Mode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>Quite Important</td>
<td>Standard Deviation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5)</td>
<td>Very Important</td>
<td>Skewness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A need for development of change management strategy for NMBM during the electricity services restructuring.</td>
<td>67%</td>
<td>26%</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>4</td>
<td>Formation of inclusive teams from staff members to take control of the change through engagements on how transition can become seamless and positive challenge.</td>
<td>61%</td>
<td>30%</td>
<td>7%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Table 6.12 shows the measurement of change management strategies that might have an internal impact to NMBM due to restructuring of electricity services.
Section D2 dealt with the possible formation of project management office wherein a drive to identify the resistance to change has to be initiated within such an office within the NMBM. Respondents viewed such an initiative as indicated by 59 percent as being very important drive and followed by 22 percent respondents that felt it was also quite important. Only 15 percent were undecided on the issue.

Section D3 dealt with the need for development of change management strategy for NMBM during the electricity services restructuring. Respondents gave a majority view that this was very important, this was shown by 67 percent. Still in agreement of this strategy development, 26 percent of the respondents felt it was quite important to do so.

Section D4 dealt with the formation of inclusive teams from staff members to take control of the change through engagements on how transition can become seamless and positive challenge.

Respondents gave a majority response of 61 percent of viewing the process a very important and 30 percent of as being quite important.

In Section D2, D3 and D4, there was negative coefficient further away from zero indicating that the distribution of responses was skewed to the left and in this case the mean was pulled to the left by the outliers and thus the mean was smaller than the median.

Measurement of the change strategies received above average acceptance with many respondents demonstrating that the strategies were very important to be implemented to ensure the electricity services restructuring are implemented in a manner that is beneficial to every stakeholder.
6.9 ANALYSIS OF SECTION E: MEASUREMENT OF BENEFITS IN ASSUMING LEADING ROLE DURING THE FORMATION OF RED

In addressing one of the subproblems that dealt with what are the consequences of full participation of NMBM in the process of establishing the proposed end-state model, REDs, Table 6.11 was designed to entail five internal impact statements as detailed here below.

### Table 6.13 Section E percentages of response frequency

<table>
<thead>
<tr>
<th>Internal impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Internal identification of core capabilities and gaining good reputation for operational excellence to be identified both internally and externally as a role model.</td>
<td>74%</td>
<td>20%</td>
<td>6%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2 Balancing creativity with cost effective solutions that are practical, useful and customer focused to take a leading role within the new RED structure.</td>
<td>52%</td>
<td>44%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>3 Acceptance of migration to RED and view it as manageable by reliance on operational excellence with core competencies and fully participate in RED establishment process as an anchor entity.</td>
<td>44%</td>
<td>41%</td>
<td>4%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>4 Offer job security to all staff affected by electricity services restructuring, especially a component of scarce skills.</td>
<td>76%</td>
<td>11%</td>
<td>9%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>5 Demonstrate a clear commitment on customer service and instill confidence in the region for new investments during the electricity services restructuring.</td>
<td>78%</td>
<td>13%</td>
<td>9%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

(1) Not Important
(2) Of little Importance
(3) Neither important nor Unimportant
(4) Quite Important
(5) Very Important
Table 6.14 shows an analysis of the questionnaire’s Section E. There were five internal impact statements that the respondents were required to rate from a Likert scaling of one to five to rate their agreements with each statement. Each respondent had an opportunity to indicate one answer for each statement from Strongly Disagree at a scale of one to Strongly Agree at a scale of five at the end.

Table 6.14 Measurement of E1, E2, E3 and E5 for assuming leading responsibility

<table>
<thead>
<tr>
<th>Internal Impact</th>
<th>(5)</th>
<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Internal identification of core capabilities and gaining good reputation for operational excellence to be identified both internally and externally as a role model.</td>
<td>74%</td>
<td>20%</td>
<td>6%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>4.674</td>
<td>5</td>
<td>5</td>
<td>0.598</td>
<td>-1.635</td>
</tr>
<tr>
<td>2 Balancing creativity with cost effective solutions that are practical, useful and customer focused to take a leading role within the new RED structure.</td>
<td>52%</td>
<td>44%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>4.475</td>
<td>5</td>
<td>5</td>
<td>0.586</td>
<td>-2.669</td>
</tr>
<tr>
<td>4 Offer job security to all staff affected by electricity services restructuring, especially a component of scarce skills.</td>
<td>76%</td>
<td>11%</td>
<td>9%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>4.587</td>
<td>5</td>
<td>5</td>
<td>0.832</td>
<td>-1.489</td>
</tr>
<tr>
<td>5 Demonstrate a clear commitment on customer service and instill confidence in the region for new investments during the electricity services restructuring.</td>
<td>78%</td>
<td>13%</td>
<td>9%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>4.696</td>
<td>5</td>
<td>5</td>
<td>0.628</td>
<td>-1454</td>
</tr>
</tbody>
</table>

Table 6.14 shows the measurement of possible benefits due to full participation by NMBM in the process of establishing the proposed end-state model, REDs.

Section E1 dealt with the identification of internal core capabilities to leverage for good reputation and for operational excellence at both internal and external levels to assume a role model position. For this to be done, the respondents
gave a 74 percent as strongly in agreement that it be pursued and followed by also a higher level of somewhat agreement of 20 percent that, it is done. Section E2 dealt with balancing creativity with cost effective solutions that are practical, useful and customer focused to take a leading role within the new RED structure. Respondents showed a 52 percent with this statement that they are in strong agreement and 44 percent were in somewhat agreement.

Section E4 dealt with the offer of job security to all staff affected by electricity services restructuring, especially a component of scarce skills. Respondents showed the 76 percent that they were strongly in agreement with this process and 11 percent with somewhat agree with the statement.

Section E5 dealt with the demonstration of a clear commitment on customer service and instils confidence in the region for new investments during the electricity services restructuring. Respondents showed the 78 percent that were strongly in agreement and 13 percent were somewhat agreement with the statement.

Section E1, E2, E4 and E5 showed a considerable strong agreement with the statements with highest percentage being 78 percent and lowest being 52 percent. The coefficient in the statements was negative and away from zero, this indicates that the distribution of the responses was skewed to the left and in all cases the mean is smaller than the median.

It would seem that in all the statements that were in Section E, the respondents were supporting the NMBM to assume the responsibility of leading role in the establishment of RED Three within the Eastern Cape region.

Table 6.15 shows Section E 3 as a measurement of assuming leading responsibility in the formation of the RED Three in the Eastern Cape region.
Section E3 shows the internal impact wherein the acceptance of migration to RED and view as a manageable by reliance on operational excellence with core competencies and fully participates in RED establishment process as an anchor entity. The statement received strong agreement of 44 percent that was less than the halfway mark of 50 percent and 41 percent of somewhat agreement. The coefficient was positive, this was an indication that the responses were positively skewed and that the mean was larger than the median.

### 6.10 CONCLUSION

This chapter was dealing with the documentation and presentation of the results of the research study that was conducted during the months of August and September 2008. The process followed in the documentation of the results was the presentation of summarised results through statistical calculations, interpretation of those statistical calculations and presentation of results through the aid of pictorial views like tables, histograms and graphs. An outline of the various questionnaire sections will be outlined individually with the summary of each section as a demonstration of the majority view.

Section A of the questionnaire detailed the biographical characteristics of the targeted sample for the research study, age, ethnicity, gender, educational levels, employment period and job status were a subject of comparison.
between the sample and the population of the NMBM top management to
determine the degree of correlation.

Section B of the questionnaire sought to gauge the perception on financial
implications to NMBM in the process of restructuring the electricity services. It
was established that there was a strong support of the statements that
supports retention by NMBM of utilisation of electricity services as a leverage
to collect revenue outstanding for other services after RED establishment,
street lighting costs to borne by the RED and implementation of strategies to
mitigate factors around negative credit rating of NMBM and impact on service
delivery targets after RED establishment.

Section C of the questionnaire measured the employment of expectations of
the NMBM employees and the majority were in strong agreement that
restructuring benefits, consultation and discussion with employees of the
electricity services and various directorates are key drivers for the successful
implementation of the plan.

Section D of the questionnaire measured the change management strategies
and the majority of respondents felt it was very important to implement
strategies to ensure the electricity services restructuring processes are of
benefit to every stakeholder.

Section E of the questionnaire measured the benefits that might be accrued
when the NMBM assumes the leading responsibility in the establishment of the
RED. An overwhelming majority of respondents felt that the NMBM should
take the leading role in the establishment of RED Three within the region.

The following chapter seven is the final chapter that will deal with the
summary, conclusion and recommendations of this research study.
CHAPTER SEVEN

SUMMARY, CONCLUSION AND RECOMMENDATIONS

7.1 INTRODUCTION

This chapter will deal with the summary of the results of the quantitative survey; draw conclusions based on literature review on identified subproblems and recommend other areas of focus for further research.

7.2 SUMMARIES AND DISCUSSION OF RESULTS RELATING TO SUBPROBLEMS

There were five sections in the research survey questionnaire and actual results were presented in chapter six.

In the process of achieving the objectives of the research study and in particular in addressing the subproblems of the problem statement, the summaries and discussions of results are outlined here below.

7.2.1 Summary of Section A: Biographical details

A profile section of the respondents were designed to be the first section of the research study questionnaire.

According to Borg, Braun & Baumgartner (2008:149), employees who are highly satisfied should have no reason to withhold identifying information, because reporting positive attitudes and opinions is no risk in general.

Satisfied employees contribute to the organisational goals by providing accurate and complete information in the survey, because organisational commitment and job satisfaction are typically positively correlated (Meyer, Stanley, Herscovitch & Topolnytsky, 2002:20).
An establishment of the process to profile the respondents was done, that reflected the trend of the survey on the population of NMBM top management and the information led to deduction of certain scenarios.

The bulk of the respondents for sample and population were in the brackets of 36 to 49 years older at 67 percent and 43 percent respectively followed by 50 years and older by 26 percent and 38 percent respectively. This was an indication that the majority of respondents were stable career individuals that might still stay longer in the employ of the NMBM.

The highest number of respondents with a minimum bachelor’s degree was 48 percent and followed by 28 percent of masters’ degree qualification, this indicated a high level of literacy level and strong understanding of the implications the electricity services restructuring might have on NMBM going forward.

Sample responses of 59 percent were received from those employees that were in the employ of NMBM for 10 or more years, this was an indication that the opinions expressed were from employees that could draw from their experiences of employment services on future possible impacts to NMBM.

Sample responses were mainly from the Directors’ level by 48 percent, this was the important level in the hierarchy of the NMBM as they enjoy permanent status as compared with the five-year contractual employees at Executive Directors’ level 22 percent. Directors were unlikely not to consider future implications to NMBM due to electricity services restructuring.

There was a 100 percent response rate from the sample and according to (Borg et al., 2008:156), commitment was found to have a main effect on the likelihood to answer the demographic items.

In almost all the demographic data obtained from the sample, there was a degree of correlation with the population of the NMBM top management that
necessitated a reflective view as a conclusion on the results that had been obtained on the various responses from the sample.

7.2.2 Summary of Section B: Perceived financial implications

The purpose of Section B was to establish perceived financial implications to NMBM due to restructuring of electricity services and migration to form part of RED model. Five internal impact statements were drawn and respondents were asked to rate them in order of their perceived importance.

According to Research Channel Africa (2008:31), the municipalities are concerned that the establishment of the REDs as national public entities will cut off a valuable stream of municipal revenue and a means of municipal control, and will affect municipal credit ratings. On average, electricity provides between 30 percent and 40 percent of municipal revenue, and surpluses raised from electricity distribution are used to fund other public services that are running at a loss.

Measurement of perceived financial impact to NMBM due to electricity services restructuring, the responses on retention of electricity services as a mechanism to leverage on collection of other municipal services, REDs to continue to borne the costs of street lighting and development of strategies to mitigate perceived negative credit rating of NMBM and negative impact on service delivery targets were viewed as very important and quite important by a combined 87 percent, 96 percent and 91 percent respectively.

EDI Holdings Perspective on Wires – Public Lighting (2008:1), public lighting should be ringfenced as a non-core business activity of the electricity department and once the RED has been established, the provision of the service could be managed via a Service Level Agreement between the municipality and the RED or the municipality could outsource the service to any other service provider.
In the original data of responses, there was a measure of consistency of the data that was clearly demonstrated on utilising electricity services by NMBM beyond RED establishment process. This was a clear indication that the programme management unit of NMBM that deals with restructuring and EDI Holdings has to incorporate these assertions in the restructuring plan to retain the valuable stream of municipal revenue and the means of municipal control that will affect municipal credit rating.

The measurement of perceived financial impact to NMBM due to restructuring of electricity services as an internal impact was on asset base being preferred method for allocating shareholding for various legacy entities in the new RED structure.

According to Research Channel Africa (2008:32), another challenge facing the EDI restructuring process relates to the transfer of assets and staff from the municipalities and Eskom to the REDs, with specific difficulties relating to compensation for transferred assets and an asset transfer framework to clarify such issues is yet to be finalised.

Whereas the 17 percent of the respondents were viewing this issue as neither important nor unimportant, the majority felt otherwise. This received a combined very important and quite important of 78 percent responses.

Without the legislative directives in the EDI restructuring process for many other processes, this leaves a material gap between the policy objectives and legal framework to facilitate the assertion of the NMBM, be that as it may, it should be recorded as a general agreement to have asset base being preferred method for allocating shareholding for various legacy entities in the new RED structure.

Lastly on the measurement of perceived financial impact as an internal impact to NMBM to continue utilising the annual paid shared services like Information Technology, Human Capital and financial services from other directorates, the
majority of combined very important and quite important respondents were about 80 percent.

The data received from the respondents showed a measure of consistency. This clearly demonstrated that the process has to be continued after the RED establishment process through the usage of Service Level Agreements between the RED company and the NMBM.

7.2.3 Summary of Section C: Protection of employee expectations during restructuring

The purpose of Section C was to establish measurement of protection of employee expectations during the process of restructuring of electricity services. Five internal impact statements were drawn and respondents were asked to rate them in order of their agreement or disagreement.

Operational ringfencing is the process of separating the day to day business process and operations of the ringfenced electricity distribution business from its parent organisation and therefore involves the identification of all core and non-core business activities in order to classify which process of a parent organisation can potentially be transferred to the RED (EDI Holdings Perspective on Ringfencing – Ringfencing Framework; 2008:1).

Werner (2007:376) provides a definition on organisational change and innovation as a scientific discipline aimed at improving the effectiveness of an organisation and its members through long-range, planned, systematic and well-managed interventions in the organisation’s human process, structures and systems in anticipation of, and in response to changes in the environment.

A measurement on employee expectation on being given an opportunity to give input into the restructuring of electricity services received strongly disagreement of 35 percent with 24 percent undecided on the matter.
Programme management unit of NMBM together with the EDI Holdings that are responsible to coordinate the process of restructuring the EDI in South Africa have to ensure that the communication of the restructuring objectives of the electricity services within the NMBM is done in full scale and hence an improved communication might yield positive results of stakeholder buy-in.

Measurement of employee expectations on benefits of restructuring, discussion on introduction of operational, financial and human resource ringfencing received responses that were in the percentages of thirties that were strongly disagreeing that consultation took place in a manner that was inclusive of various stakeholders. For all the discussions as part of the consultation that could have taken place with the NMBM employees, employees showed undecided rating of between 24 and 30 percent.

This is a clear issue of non-participatory role by employees affected by electricity services restructuring, whether intended or not, that needs an intervention that promotes inclusiveness through knowledge sharing and information dissemination to all affected.

7.2.4 Summary of Section D: Measurement of change management strategies

The purpose of Section D was to establish measurement of change management strategies as an internal impact. Four internal impact statements were drawn and respondents were asked to rate them in order of their importance from not important to very important.

Organisations that are managed rigidly, where decisions have to be approved up the line before action can be taken and where employees are not directly integrated into the strategies and plans of the organisation, cannot react in time to the changing environment (Werner, 2007:374).
Measurement of internal impact on whether the employees of NMBM desire to be consulted about the vision and objectives of the electricity services restructuring in future, received a 48 percent of responses that were in strong agreement with 26 percent viewing such a move as quite important. Of the remaining respondents about 17 percent were undecided on the issue.

The respondents’ data had demonstrated a measure of consistency. As the need for more consultation that outlines the vision and objectives of the electricity services restructuring by majority of 74 percent the strategy to affect this has to be devised by both the NMBM and EDI Holdings for the benefit of affected stakeholders.

Measurement of change measurement strategies as internal impact were tested on resistance to change, development of change management strategies and formation of teams as change agents to spearhead restructuring.

When people understand the need for change, the consequences of not changing, the change process and the desired end-results, they would rather participate in, than resist, the change process. The challenge for managers is to determine where they want to take the organisation to, develop a strategy to reach that destination, get buy-in from all stakeholders, give momentum to the process and measure progress and success on a continuous basis (Werner, 2007:374).

On the measurement of change management strategies, the majority of respondents gave a majority responds in confirming that those strategies were very important to be implemented to ensure the future electricity services restructuring processes are of benefit to every stakeholder.

A consequence of a failed change is a serious negative effect on the organisational performance and the ability to deal with significant/strategic change is ongoing and gaining in importance (Chrusciel, 2008:148).
7.2.5 Summary of Section E: Measurement of benefits to NMBM in assuming leading role during the formation of RED

The purpose of Section E was to establish measurement of benefits to NMBM in assuming leading role during the formation of RED. Five internal impact statements were drawn and respondents were asked to rate them in order of whether they strongly agree or disagree.

According to Chrusciel (2008:150), one element of the change champion is their open mindedness towards learning. Not only does the change champion see the individual benefits of learning, but also they understand the importance of learning to the organisation.

The future cannot be predicted accurately, and therefore organisational change cannot be a pre-planned linear process. Instead, the management of change will be punctuated by unexpected responses and problems, which will require flexible and adaptive strategies (Werner, 2007:391).

The original data received from the respondents, was a clear measure of consistency with the responses that strongly agreed with the statements that demonstrated a need for the NMBM to assume a leading role as an anchor in the RED Three jurisdiction with Eskom Southern Region and secondary municipalities within the region.

The absence of enabling legislation, the municipalities understandably remain reluctant to transfer their assets to the REDs. This reluctance has, to date, contributed significantly to stalling the EDI restructuring process, with the participation of the municipalities in the REDs currently being voluntary, owing to the Constitution, which unambiguously lists electricity reticulation as a matter over which municipalities have executive authority (Research Channel Africa, 2008:32).
7.3 RESOLUTION OF THE RESEARCH PROBLEM AND SUBPROBLEMS

The main problem, which this study aimed to address, was identified as outlined below:

**An assessment of the impact to Nelson Mandela Bay Municipality as a result of Electricity Distribution Industry restructuring in South Africa.**

To reach the aim of the research project in a manageable way that contributed to solving the problem, the following sub-problems were identified as follows:

- What are the perceived financial implications to NMBM due to transfer of electricity services to the REDs?

- How can the legitimate employment, economic and social interests of employees be protected during the electricity services restructuring at NMBM?

- How can the implementation of the RED model at NMBM be communicated to minimise resistance to change?

- What are the consequences of full participation of NMBM in the process of establishing the proposed end-state model, REDs?

The exploratory research was done through literature review in chapter two and three. Descriptive research was conducted through literature review in chapter four wherein the identification of the history and status quo of South Africa’s EDI was dealt with.

The researcher of this study took a conscious decision based on time and duration of the study and choose the cross sectional methodology that takes a snapshot of an on-going situation as it is applicable in the EDI restructuring process of establishing the RED model.
In addressing the above subproblems, as an attempt to fully address the main problem statement of the research study, the researcher utilised the questionnaire as data collection method as it was the quantitative measure and suitable for the survey method for this research.

7.4 REALISATION OF THE RESEARCH STUDY OBJECTIVES

The research study objectives were as follows:

- To establish and profile the respondents that will reflect the trend of the survey on the population of the NMBM and use the information for purposes of interpretation of responses.

- To establish perceived financial implications to NMBM due to restructuring of electricity services.

- Determine the level of protection of legitimate employment, economic and social interest of employees during the electricity services restructuring at NMBM;

- Determine the best methods on communicating the benefits of RED implementation process to minimise resistance to change;

- Highlight the consequences of full participation on NMBM in the process of RED establishment;

- Presentation of the end results of the research study to EDI Holdings (Pty) Ltd, and to the senior management of NMBM and other affected stakeholders with suggested implementation plan.

The first five research objectives were accomplished by means of the research survey that was conducted during the months of August/September 2008 at NMBM’s top management personnel.
The sixth research objective, that entails the presentation of the end results of the research study to various entities will only be affected once the results of this MBA treatise are accepted for publication.

7.5 RECOMMENDATIONS FOR FURTHER RESEARCH

The size of the sample posed some limitations on covering the broader population of the NMBM employees and also the snapshot nature of the research methodology applied. The electronic process to disseminate the questionnaire was correct for this research study but had it been intended to cover all employee grades without access to computer desktops, flow of responses would have been restricted. For further research processes, the above should be taken into consideration.

7.6 CONCLUSION

The financial viability of each RED has to be established as one of the key drivers so as to be able to fund their ongoing operations and any required new capital and needs to be able to service debt at a gearing level of up to 70 percent and to earn a reasonable return on equity.

Protection of legitimate employment, economic and social interest of employees automatically becomes the new RED structure’s prerogative for all affected employees. All the contractual and other rights that the employees had against the NMBM as it previous employer would become enforceable against the RED.

Barriers to effective communication should be mitigated at all costs to yield positive organisational control and NMBM should provide a platform for interaction amongst other entities during the process whilst maintaining accountability of all stakeholders.
REFERENCE LIST


Riege, A.M. 2003. Validity and reliability tests in case study research: *a literature review with “hands-on” applications for each research phase*. Qualitative Market Research: An International Journal Volume 6, No 2, pp75-86.


Dear Participant in Pilot Study

This questionnaire is designed to study the impact to Nelson Mandela Bay Municipality as a result of the restructuring of Electricity Distribution Industry in South Africa. The information you provide will help us to better understand the impact of restructuring within the operational context of Nelson Mandela Bay Municipality as one of the role players in the formation of Regional Electricity Distributor Three (RED Three).

In a group of industry experts, Nelson Mandela Bay Municipality Senior Management Team and academic staff, you have been selected to participate in the pilot study of the research study.

The intention of the pilot study is to examine the measurement properties of the survey questionnaires. It would be appreciated that you provide feedback on everything that can affect answering that in your opinion you deem fit and necessary to effect changes and/or additional comments.

Thank you very much for your time and cooperation. I greatly appreciate your expert advice and help in furthering this research endeavour.
Dear Participant

This questionnaire is designed to assess the impact to Nelson Mandela Bay Municipality as a result of the restructuring of Electricity Distribution Industry in South Africa. The information you provide will help us to better understand the impact of restructuring within the operational context of Nelson Mandela Bay Municipality as one of the role players in the formation of Regional Electricity Distributor Three (RED Three). Because you form part of the Senior Management of the Metro and you can offer us an opinion of your experience in relation to restructuring of electricity services, I request you to respond to the questions frankly and honestly.

Your response will be kept strictly confidential. Only members of the research team will have access to the information you give. In order to ensure the utmost privacy, we have provided and identification number for each participant. We will use this number only for follow-up procedures. The numbers, names, or the completed questionnaires will not be made available to anyone other than the research team. A summary of the results will be mailed to you after the data are analysed.
Participation in this research is entirely voluntary and you have the right not to participate or to withdraw from this study at any point in time. I urge you to please answer ALL questions and not leave any questions unanswered.

Thank you very much for your time and cooperation. I greatly appreciate your directorate and your help in furthering this research endeavour.
Section A – Biographical details

(Please tick a box that is applicable to you)

1.1 My age is between:
   - 18 – 24 (1)
   - 25 – 35 (2)
   - 36 – 49 (3)
   - 50 and above (4)

1.2 My ethnic group is:
   - African (1)
   - Coloured (2)
   - Indian (3)
   - Chinese (4)
   - White (5)
   - Other – please specify (6)

1.3 My gender is:
   - Male (1)
   - Female (2)

1.4 My highest education level is:
   - Below grade 12(matric) (1)
   - Matric (2)
   - M+3 (e.g. Technikon Diploma) (3)
   - M+4 (e.g. Bachelor Degree) (4)
   - Masters Degree (5)
   - Doctoral Degree (6)
   - Other – please specify (7)

1.5 My number of years employed at NMBM:
   - 1 – 3 years (1)
   - 4 – 5 years (2)
   - 6 – 9 years (3)
   - 10 or more years (4)

1.6 Presently my directorate is (Please specify sub-directorate at bottom)
   - Corporate Services (1)
   - Infrastructure & Development (2)
   - Electricity & Energy (3)
   - Environment & Health (4)
   - Economic Development & Recreational Services (5)
   - Housing & Land (6)
   - Safety & Security (7)
   - Budget & Treasury (8)
   - Chief Operating Officer (9)
   - Please specify sub-directorate (10)
1.7 My job status:
   Executive Director
   Director
   Assistant Director
   Below Assistant Director

Section B. What are the perceived financial implications to NMBM due to transfer of electricity services to the REDs?
(Please tick a box to indicate a degree to which you agree with the following statements)

<table>
<thead>
<tr>
<th>No</th>
<th>Statement</th>
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<tbody>
<tr>
<td></td>
<td><strong>Internal Impact</strong></td>
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<tr>
<td></td>
<td>Perceived financial implications to NMBM due to RED* establishment</td>
<td>Very Important</td>
<td>Quite Important</td>
<td>Neither Important Nor Unimportant</td>
<td>Of little Importance</td>
<td>Not Important</td>
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<tr>
<td></td>
<td>1 One of the revenue collection mechanisms is the use of the electricity services as leverage for the collection of revenue outstanding for other services, this practice should continue after the REDs establishment.</td>
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<td>2 Street lighting influences safety and security of communities and currently this cost is borne by Electricity and Energy directorate, this practice should continue after the REDs establishment.</td>
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<td>3 A perception is that the cash flow of NMBM could be negatively affected by transferring electricity services to the RED, this would have an impact on service delivery targets and credit rating, and as such strategies to mitigate this should be in place.</td>
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<td>No</td>
<td><strong>Internal Impact</strong></td>
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<td>4</td>
<td>Perceived financial implications to NMBM due to RED* establishment</td>
<td>Very Important</td>
<td>Quite Important</td>
<td>Neither Important Nor Unimportant</td>
<td>Of little Importance</td>
<td>Not Important</td>
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<td></td>
<td>Asset base of each participant in the RED establishment process would be a preferred method for allocating shareholding in the new RED structure.</td>
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<td>5</td>
<td>Electricity and Energy Directorate utilize the shared services from other directorates like billing, IT, HR and financial services, this practice should continue through Service Level Agreements between Metro and RED.</td>
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</table>

*RED – Regional Electricity Distributor (Eastern Cape region has about 45 entities that will form RED 3)*
Section C. How can the legitimate employment, economic and social interest of employees be protected during the restructuring at NMBM?

(Please tick a box to indicate a degree to which you agree with statements)

<table>
<thead>
<tr>
<th></th>
<th><strong>Internal impact</strong></th>
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<th>(4)</th>
<th>(3)</th>
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</thead>
<tbody>
<tr>
<td>No</td>
<td>Protection of employees’ legitimate interests during restructuring of electricity services</td>
<td>Strongly Agree</td>
<td>Some what Agree</td>
<td>Neither Agree Nor dis-agree</td>
<td>Somewhat Dis agree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

1. Employees in my directorate were given an opportunity to give input into the restructuring of electricity services.

2. Benefits of restructuring were discussed with affected employees in my directorate.

3. During the introduction of operational ring fencing, all affected employees were consulted in my directorate.

4. During the introduction of financial ring fencing, a prescriptive process as laid down by ring fencing process was followed in my directorate.

5. During the introduction of human resources ring fencing, all employee-related activities and liabilities were discussed with affected employees in my directorate.

Operational ring fencing is a process of separating the day-to-day business process and operations of the electricity services from the parent municipality.

Financial ring fencing is the process of identifying the value of the assets, liabilities, and revenues, cost drivers and other costs related to ring fencing.

Human resources ring fencing cuts across all the processes of the entire electricity distribution value chain.
Section D. How can the implementation of the RED model at NMBM be communicated to minimise resistance to change?

*(Please tick a box to indicate a degree to which you agree with the following statements)*

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<tr>
<th>No</th>
<th>External impact</th>
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<tbody>
<tr>
<td>No</td>
<td>RED implementation communicated to minimize resistance to change</td>
<td>Very Important</td>
<td>Quite Important</td>
<td>Neither Important Nor Unimportant</td>
<td>Of little Importance</td>
<td>Not Important</td>
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<tr>
<td>1</td>
<td>The vision and objectives of electricity services restructuring to be clearly communicated to my directorate.</td>
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<td>2</td>
<td>Resistance to change to be identified and managed through a newly formed project management office of NMBM.</td>
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<td>3</td>
<td>A need for development of change management strategy for NMBM during the electricity services restructuring.</td>
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<tr>
<td>No</td>
<td>RED implementation communicated to minimize resistance to change</td>
<td>(5)</td>
<td>(4)</td>
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</table>

4  Formation of inclusive teams from staff members to take control of the change through engagements on how transition can become seamless and positive challenge.
Section E. What are the consequences of full participation of NMBM in the process of establishing the proposed end-state model, REDs?

(Please tick a box to indicate a degree to which you agree with the statements)

<table>
<thead>
<tr>
<th>Internal impact</th>
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<th>(4)</th>
<th>(3)</th>
<th>(2)</th>
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</thead>
<tbody>
<tr>
<td>No Consequences of full participation on NMBM in RED establishment</td>
<td>Strongly Agree</td>
<td>Somewhat Agree</td>
<td>Neither Agree Nor Disagree</td>
<td>Somewhat Disagree</td>
<td>Strongly Disagree</td>
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<tr>
<td>1 Internal identification of core capabilities and gaining good reputation for operational excellence to be identified both internally and externally as a role model.</td>
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<td>2 Balancing creativity with cost effective solutions that are practical, useful and customer focused to take a leading role within the new RED structure.</td>
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<tr>
<td>No</td>
<td>Consequences of full participation on NMBM in RED establishment</td>
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<td>3</td>
<td>Acceptance of migration to RED and view it as manageable by reliance on operational excellence with core competencies and fully participate in RED establishment process as an anchor entity.</td>
<td>Strongly Agree</td>
<td>Somewhat Agree</td>
<td>Neither Agree Nor Disagree</td>
<td>Somewhat Disagree</td>
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<td>4</td>
<td>Offer job security to all staff affected by electricity services restructuring, especially a component of scarce skills.</td>
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<td>5</td>
<td>Demonstrate a clear commitment on customer service and instill confidence in the region for new investments during the electricity services restructuring.</td>
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YOUR ASSISTANCE IS GREATLY APPRECIATED – THANK YOU