ENHANCING THE ROLE OF THE KAIZEN SUGGESTION TOOL IN SOUTH AFRICAN LEAN AUTOMOTIVE COMPANIES OF THE EASTERN CAPE

By

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Declaration

I, Adedeji Adeyemi Charles, student number 208094596, hereby declare that the thesis for the award of the degree of Doctor Technologiae by research is my own work and that it has not previously been submitted for assessment or completion of any postgraduate qualification to another university or for another qualification.

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Date:...

Abstract

The Toyota manufacturing system, aptly referred to as Lean manufacturing, has received a reasonable appreciation and awareness over the past decade in South African industry. This production phenomenon constitutes an organizational culture that encourages world-class production success through the liberation of factory resources, while employees are empowered and encouraged to contribute ideas for the improvement of processes and products. However, despite lean awareness and the crucial role of employee participation in the suggestion of ideas in world-class organizations, the performance level of lean manufacturing in South African industry is largely devoid of the Kaizen suggestion tool, particularly in the automotive companies of the Eastern Cape. The aim of this research was to proffer appropriate recommendations, improved awareness, understanding and practice for the improvement of the Kaizen suggestion principle in the automotive companies of the Eastern Cape.

The research primarily focused on the 'management/employees' paradigm within the organisational context. The methodology employed in the study included a thorough review of the relevant literature and a questionnaire, which was developed and administered to both the management and employees of the thirty automotive components suppliers in Eastern Cape. The target companies constituted the units of analyses and therefore provided the opportunity for a detailed investigation of the links between management and employees as well as a submission of ideas for operational and organisational processes as established in the literature review. Epistemologically, the research is objectivist and paradigmically, positivist. However, some qualitative aspects of the data were relevant to the study and, therefore, were used in a complementary manner. The case approach utilized mixed methods by applying a range of data collection techniques and evidence from

multiple sources while the sampling technique was sequential, involving both purposive and stratified random sampling. The study reveals the apparent lack of a systematic mechanism for the practice and administration of the Kaizen suggestion tools in most Eastern Cape automotive companies. This demerit is found to have negatively affected maximum employee participation and involvement in organizational decision making within the Province. The study has established a basic level of awareness and understanding among employees/employers relations that the Kaizen suggestion scheme is a vital tool for delivering strategic objectives in the management of decision making and organizational growth. The study strongly advocates the inclusion of employee suggestion systems as part of the organizational process.

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Dedication

This thesis is dedicated to the Almighty God.

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Chapter 1 :   PROBLEM AND ITS SETTINGS

1.1   Background

The principle of Lean Manufacturing was pioneered by the Japanese industrial revolution and the TOYOTA Production System. This principle is seen to have redefined the work of functions, departments and organizations so that a positive value is created through continuous employee participation and engagement. The application of the Toyota concepts depend on the widespread and intense use of performance measurement in the learning process at the operational level, by helping the employees to see how they are performing, rather than simply providing feedback for the central control function (Marskell & Baggaley, 2004: 14). This industrial paradigm is considered a key business strategy for the success of any business that needs to be competitive and survive in a continuously evolving world.

In a bid to achieve continuous improvement and competitive advantage, many South African automotive component manufacturers invest huge resources in the acquisition of machinery, innovations and maintenance, with minimal pursuance of qualitative strategies for employee suggestion/involvement in decision making, engagement and empowerment (Slack *et al*, 2001: 611).

Hill (2003: 234) agrees with the World Investment Report (2002) that, from the beginning of 2000, the world has been changing in macroeconomic stabilization, economic deregulation, large scale privatization programmes, the liberalization of regulations applying to private investment and regional integration. These global industrial dynamics have exposed organizations to several world challenges. These challenges, according to Hill (2003: 236), are the drivers for change in organizational structures and production processes. The

success of companies such as Toyota has demonstrated that the challenges are better managed by adopting the lean system in organizational processes and introducing leaner management hierarchies. These paradigms give rise to the need for individual employees to participate through contributions and technical suggestions to the production inputs and leadership processes so as to achieve a competitive edge (Day *et al;* 2004: 3).

Researchers from various disciplines have investigated salient factors dealing with competitive advantage in the global economy. Vachey (2004) asserts that the outcomes of these studies have brought about a notable development in organizational strategies that evolved around organizational re-engineering, managerial styles, information technology, proactive production processes, dynamic marketing and human resources.

In Japan and many developing countries, lean production forms the balance of rapidly developing world-class manufacturing processes. The Japanese concept of Kaizen depicts ''continuous improvement'' and is a predictor of quality assurance. Slack et al (2001:611) opine that the Kaizen strategy calls for a never-ending effort in improvement that involves a company-wide, top-down, yet bottom-up approach. In this concept, management works continuously towards revising their process standards, with a resultant higher employee satisfaction and involvement in decision making, more oriented corporate cultures, better employee empowerment and communication without massive capital investment (Liker & Hoseus, 2008: 23).

The Japanese strategic concept of Kaizen encourages employee suggestion and contributions in industrial decision making and production processes. This is a functional strategy for innovation and

creativity. According to Womack et al (2007), "Kaizen Teian is a Japanese term for a suggestion system in which employees are motivated to come up with small ideas and implement the ideas themselves rather than presenting ideas for someone else to analyse and execute". This concept activates more productive business needs, improvement of employee creativity/efficiencies, and greater workers' contribution. Reinertsen and Shaeffer (2005) postulate that an organizational paradigm change, with bias towards the adoption and application of Kaizen tools in a suggestion scheme, is unavoidable because the lean alternative helps to redefine the organizational work functions, departments and organizational structures so that a positive contribution to value creation is achieved, while the need for employee empowerment and involvement in idea suggestion at every point along the value stream is enhanced.

Robinson and Schroeder (2004:37-38) concur with Miller (2003) that the employee ideas suggestion strategy is one of the most misunderstood and least used lean tools, despite its enormous benefits as seen in the Toyota Production System (TPS). At Toyota, each year, the 67,000 employees submit approximately 700,000 cost-saving improvement ideas (10 ideas per employee per year), with over 99% of the ideas implemented (Miller, 2003). This strategy has placed Toyota on an enviable platform of productivity. Neagoe and Klein (2009) believe that continuous improvement through employees' suggestions is a lean tool for radical organizational change.

Chen and Tjosvold (2006) believe that the long and short term effects of adopting and implementing the Japanese Suggestion System are customer satisfaction, an improved productivity index, the attainment of world-class standards, employees' citizenship, job satisfaction and improved corporate revenue. This paradigm change is in sharp contrast

to the traditional view which regards employees as a cost to the organization (Renwick, 2003, Poisat, 2005, Womack *et al,* 2007:260). It is important to note that employees' citizenship and empowerment give rise to a positive attitude and dedication in the workplace. Kiger (2002) buttresses this concept with the SEAR ROEBUCK Stores' statistical results which state that with every five percent improvement in employees' attitude (through training, motivation, and engagement factors), customer satisfaction is increased by one and a third percent; while corporate revenue rises by half a percent. From this result, the belief that people are an organization's best assets is completely accentuated. Poisat (2005) is of the view that Kiger's explanation provides compelling evidence as to why organizations should engage their employees positively in strategic decisions. The idea of motivating and treating employees in a similar capacity as organizational assets is one of the critical factors in a lean organization (Sharma, 2005). The practice of this concept is completely absent in most automotive organizations in South Africa.

The above discussion provides the premise for why employees in organizations should be involved/engaged in all facets of the managerial nitty-gritty, with adequate motivating incentives. The result of this is that indispensable success and competitive advantage will be attained in a structured organization whose employees are fully motivated to contribute creative ideas and be involved in the organizational processes. The above discussions provide the platforms for the investigation of the main problems of this study.

1.2 THE PROBLEM DEFINITION

1.2.1 Main problem

South Africa has realised that industrial development is a key element to sustainable economic growth. However, according to Seventer and Van (2004), 'South African industries are not very well represented in the global trade of dynamic products; therefore, the South African automotive component suppliers are less competitive in both the local and international markets. The industries are constantly facing competition from foreign organizations such as China.

Fallah and Lechler (2008) opine that companies can no longer plan to respond to global needs sequentially as they have done for decades because staying in the traditional order may result in market loss to competitors.

Slack et al (2001:612) and Poisat (2006:3) believe that many South African automotive component industries restructured and adopted lean manufacturing techniques in order to improve their manufacturing efficiencies and overall organizational performance through better use of their organizations' resources. The implementation of these principles and techniques, however, are devoid of world-class continuous improvement, employee empowerment and involvement in the submission of creative ideas. The failure of these principles in South African automotive industries gives rise to the following research problem: How can South African manufacturers of automotive components achieve world-class levels of employee participation in the submission of suggestions for continuous improvement?

In this context, the sub problems arising from the above statement include the following:

- ➢ **Sub-Problem 1:** What are the current levels of the submission of employee suggestions in South African automotive component industries?
- ➢ **Sub-Problem 2:** To what extent are these suggestions implemented?
- ➢ **Sub-Problem 3:** What mechanisms do South African automotive components suppliers currently use in encouraging the submission and implementation of employee suggestions?
- ➢ **Sub-Problem 4:** What are the barriers to the submission and implementation of employee suggestions and contribution within the South African automotive industry?
- ➢ **Sub-Problem 5:** What best practices or techniques can the South African automotive components manufacturers adopt to encourage employee suggestions and how can these be implemented?

1.3   AIM AND OBJECTIVES OF THE STUDY

The aim of this study is to develop a strategy that will incorporate world-class levels of employee suggestion and participation for continuous improvement in South African automotive component companies in the Eastern Cape.

In this regard, the specific objectives of this study include:

(i)   To assess the current practice and levels of submission of employee suggestions in South African automotive component industry in the Eastern Cape.

(ii)   To evaluate the factors that drive employee participation and suggestions in the automotive components industry in the Eastern Cape.

(iii)   To evaluate the contributions of employee participation and suggestions in the overall continuous improvement of the automotive components industry in the Eastern Cape.

(iv)   To assess motivational incentives, rewards and other drivers of sustainable employee participation and suggestions for continuous improvement in the automotive components' industry in the Eastern Cape.

(v)   To proffer contributory performance tools for the enhancement of Kaizen suggestion system for the automotive components industry in the Eastern Cape.

1.4   RESEARCH LIMITATION

This work is focused on the evaluation and ways of enhancing the Kaizen suggestion scheme in automotive components companies in the Eastern Cape. The organizational scope of this research will be limited to automotive components manufacturing companies employing in excess of 50 workers in the Eastern Cape Province of South Africa. Omitting smaller organizations does not imply that they do not merit exploration.

The geographical area of the sample study will be limited to automotive components suppliers within the Eastern Cape. This demarcation does not imply that the result of the research is not applicable in other organizations outside the province. Restricting this work as stated above is for the purpose of making the research work manageable.

1.5   DEFINITIONS AND OVERVIEW OF SELECTED CONCEPTS

1.5.1 Globalization and Organizational Competitive Edge

Globalization, according to Hill (2000: 5), refers to a process by which national economies are gradually transforming and moving towards a worldwide, interdependent economic system; thereby creating

opportunities for large and small businesses to become more profitable due to lower cost structures and increasing income values. Further, it is the shift towards a more integrated and interdependent world economy. Johan *et al* (2001) state that globalization connotes four major global dimensions; the Financial Market Globalization (the heart of the global economy), the Transformation of International Trade, the Internationalization of Production, and the Globalization of Science and Technology.

Daniels *et al* (2002: 58) suggest that globalization has created opportunities for new and established businesses, as well as, new threats and challenges to the traditional order of the functional approach of organizations. Companies, therefore, can no longer plan to respond to global needs sequentially, as they have done for decades. Staying in the traditional order may result in market loss to competitors; hence, companies competing in the global market need to globally introduce innovative products, services and processes rapidly and effectively for onward competitive advantage (Fallah and Lechler, 2008).

Raymond (2008: 5) concurs with Fallah and Lechler (2008) that a clear strategy for organizations' competitive advantage must be tailored along a new paradigm such as Organization Structure, employee involvement and engagement, training of personnel, innovative processes and quality assurance, among others.

It is a fact therefore, that the global industrial challenges and threats provide the drive for Organizations to explore alternative approaches for achieving a competitive advantage. A clear strategy for global innovation must, therefore, be crafted to accommodate employee empowerment and participation. However, organizations operating in the traditional structures and functional techniques in order to achieve

desired quality and profitability, in the global economy, may be out of tune in the path of competitive advantage (Oakland, 2003: 433).

1.5.2 Organization Structure, Leadership and Employee Engagement

The changing business and technological worlds require a dynamic and efficient management strategy embedded within an effective and efficient organization structure that has shifted from the centralized and hierarchical traditional order to an innovative, learning, decentralized and organic network type. Hiam (2003: 7) believes that there is an acceptance in the business world to adopt new strategies in response to the changing business environment and to include employees in the process.

Employee participation is a pro-active construct in the empowerment strategy for continuous improvement. It is the democratic involvement of workers in decision making (Van der Walt, 2008). For example, the relationship between employers and employees in South Africa during most of the 20th Century has been characterized by conflict and hostility This scenario has prompted the government to give credence to labour relations in order to rebuild the country's economy and introduce industrial democracy (Finnemore, 2002:19). The South African Labour Relations Act No. 66 of 1995 workplace forums (WPFs) was therefore introduced as a structure to promote employee participation in decision making in the workplace. This was done to move companies towards the ideal of industrial democracy in South African workplaces.

Robbins *et al* (2003: 242) agree with Schultz *et al* (2003: 185) that the importance of leadership cannot be underplayed in any organization. Leadership is a process by which an individual influences others to be

able to achieve set goals, and shows the way so that the group of followers becomes more unified, rational, and logical in the performance of their assigned targets. Organizational transformation, therefore, requires individuals at every level to participate in the leadership process.

According to Towers (2003), organizational leadership refers to top management that is responsible for formulating strategy and policy. Another way of understanding and appreciating leadership roles in an organization is to compare leadership with management, bearing in mind the functions of planning, organizing, problem solving and control of activities that are related to the everyday running of an organization; However, organizational growth and advancement could be hampered by the management's tendency to over-manage and under-lead (Schultz *et al*; 2003: 188). The difference between leadership and management is shown in table 1.1.

Transformational theories of leadership, according to Schultz *et al* (2003: 186), demonstrate the crucial role that dynamic leaders play in creating an adaptive organization, where an adaptive organization anticipates changes in its environment so that it proactively respond to such changes Transformational leaders are needed in adaptive organization to engage employees through personal appeal, inspiration and motivational factors, in order to move the organization towards a better position and a competitive edge. Leadership development depends on nurturing social relations among individuals in a group, team, or organization (Doyle & Smith, 2006). The interplay between leadership in an organizational culture and engaged workers is represented on the fringes of the employee engagement model shown in figure 1.1.

Table 1.1   Difference between Leadership and Management

Leaders	Management
Initiate change	Implement change
Develop	Maintain
Inspire people	Monitor people
Do the right things	Do things right
Assume a long-term perspective	Act reactively
Connect with followers	Preserve authority

Source: Schultz *et al;* (2003, p.187).

From table 1.1, it can be seen that the responsibilities of a leader lie in initiating change and developing and inspiring people to do the right things. Leaders assume a long term perspective (proactive) while connecting with followers. In other words, the implementation of initiated change, as well as maintaining them is the role of the management. Inspired people are monitored to do things right. Management, unlike a leader, reacts spontaneously and preserves authority along the hierarchical sequence. Robbins *et al* (2003: 242) opined that a conducive organizational culture is birthed whenever there is integration between organizational leadership and engaged employees. A typical theoretical model depicting this postulation is shown in figure 1.1.
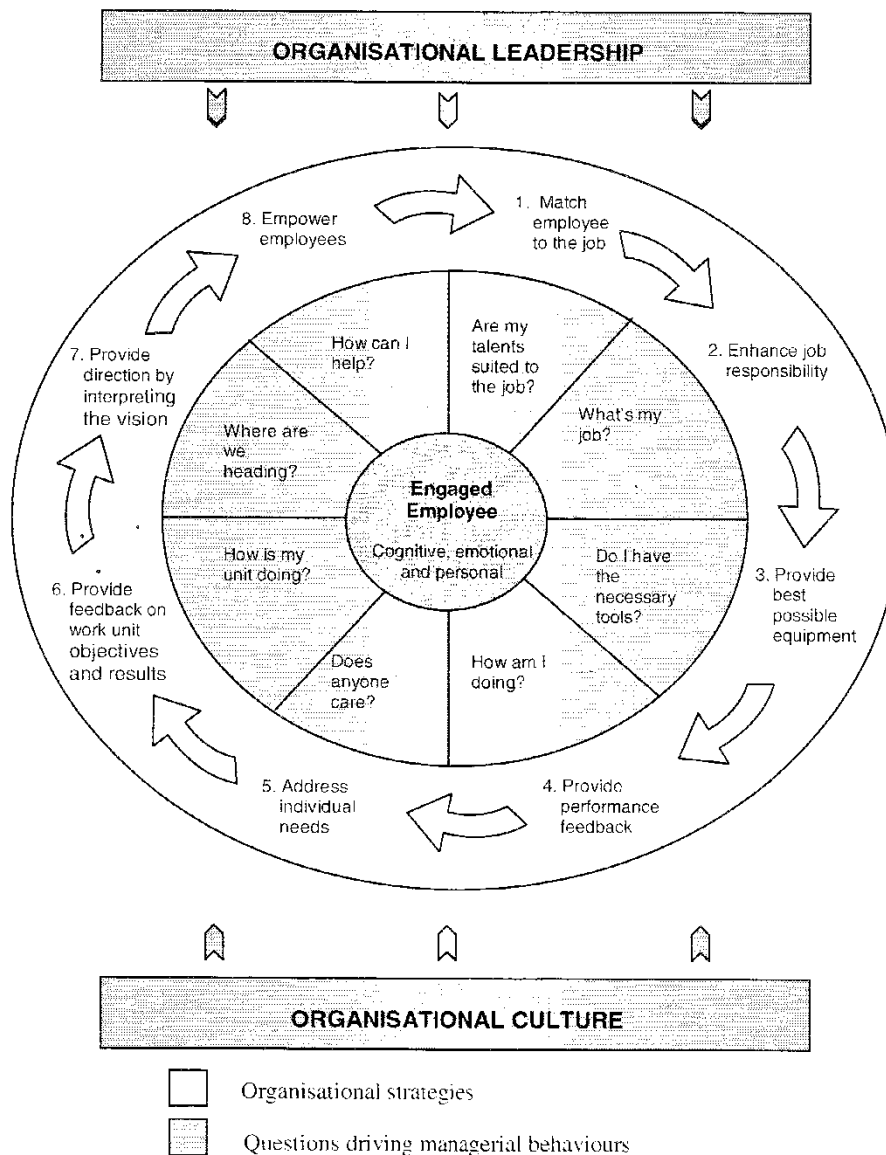
Figure 1.1   Theoretical Model for Engaging employees

Source: Gratton, L. (2004)

From figure 1.1, leadership and organizational culture are both represented on the fringes of the employee engagement model. These two constructs play an important role in creating the conditions for engaging employees. Leadership is required to provide a clear vision (direction), translate the direction in a people context (behaviours), identify organizational processes that support or hinder the

implementation of the new vision, show commitment and develop trust (employee) through open communications, and introduce organizational processes that support reward and performance measurement. These leadership functions need to be integrated with the factors of organizational culture (organizational structure, a stimulating work environment, knowledge management, teamwork and empowerment, are the factors that impinge on organizational culture) for the creation of a participatory and engaged employee (Poisat, 2006:133).

1.5.3 Lean principles in the Organizational paradigm

The 'Muda' concept, a Japanese term for Lean, is a basis for Lean thinking in Organizations that are focusing on the eradication of organizational waste. This waste refers to any activities in the organizational processes that absorb resources but add no value and profitability to the final products. This includes finished goods and services which do not meet the customer's requirements (Liker & Morgan, 2006: 22; Womack & Jones, 1996: 15).

Campbell (2006) states that the objective of Lean organizations is to constantly seek the best economic use of assets, as new waste-less operational paths are pursued, while employees are empowered and involved in organizational processes for optimum productivity. Organizations initiating a world-class productivity need to imbibe aggressively the lean tools in their production processes. Smalley (2005) states that Lean manufacturing encompasses the manufacturing concerns of implementation tools such as just-in-time (JIT), Six Sigma, Economic Value Added (EVA), Total Productive Maintenance, Value Stream Mapping, Toyota Production System and Team-based Problem Solving, among others.

At the inception of Lean, many organizations opted for the Kaizen blitz process which converts production lines or processes to one-piece flow operations. The Kaizen blitz process is, consequently, a mere improvement approach when compared with the Six Sigma' breakthrough improvement methodology (Liker & Meier, 2007). Smalley (2005) indicates that the 2004 report of the Breakthrough Management Group stated that the Kaizen approach focuses on a 5% gain, while six Sigma methodologies, which use the Taguchi approach, focus on sustainable gains in excess of 30%.

1.5.4 Employees' Empowerment and Involvement in Suggestion Scheme

Employee empowerment, orchestrated by the changing paradigm in the world of global competition, (where innovation, speed, improved productivity, customer satisfaction, and low cost are demanded), was proffered as one of the key reasons for the organizational search for ways of pursuing and improving employees' total commitment and involvement in management decisions for onward competitive advantage.

Robinson and Hayday (2003) refer to the phenomenon of workers' empowerment, participation and involvement as employee engagement. Engagement principles capsulate the descriptions of employee's attitudes in relation to their work, management, organization, and customers. Sappal (2004) opines that factors to be considered for employee engagement are: job satisfaction; motivational approaches; commitment; development; and the individual employee's emotive status in an organization. These factors are the predictors of employee empowerment and engagement (Luthans & Peterson, 2001).

Kowalski (2002) says that employee involvement/engagement has for many years been a powerful contributing factor to the success of the Japanese and American Business sectors because the approach contributed immensely to their industrial revolution and added value to the organizations in achieving the necessary cutting edge. Further, the principle of employee involvement is a deliberate attempt by organizations to motivate individual employees to participate in and be committed to helping organizations achieve the competitive advantage. This thought is reflected in the Japanese production system (JPS). Japanese management encourages employees to generate a great number of suggestions. Employees are encouraged and motivated to work hard to consider and implement these suggestions while the tested and achievable suggestions are often incorporated into the overall Kaizen strategy for continuous improvement (Womack *et al*; 2007:265).

The Gallup Organization's analysis, conducted on employees, concluded that the most profitable work sectors of organizations witnessed employees doing what they do best, with people they like, and with a strong sense of psychological ownership. The Perrin Talent Report of 2003 classifies employee engagement issues into three dimensions namely: the emotional, cognitive and physical dimensions. Of these, the emotional and cognitive are the key elements for psychological engagement and organizational behaviours. Harter, 1999, cited in Staw, 2004:100, indicates organizational citizenship, commitment, motivation, self-efficacy (skill), training, and many others, as notable drivers of employees' engagement.

The Gallup Organization's Business Performance path (2001) capsulated the eight decisive steps that organizations need to pursue, if they are to experience an increase in stock. This path starts with the identification of employee strength, the stage of the identification of the

right 'fit' between employees and positions, where they are allowed to utilize their talents and through to levels such as managers; engaged employees; loyal customers' factors, and sustainable growth (Womack *et al*; 2007:265). All these stages lead to real profit increase and stock as shown in figure 1.2.
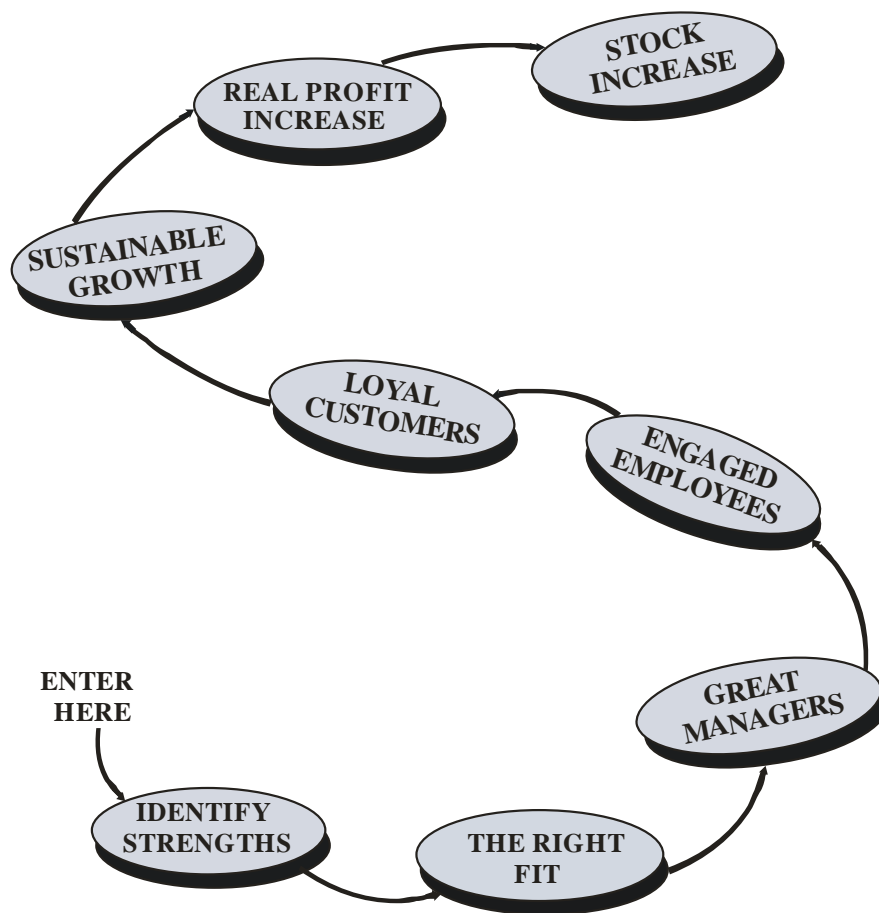
Figure 1.2   The GALLUP PATH to Business Performance

Source: Buckingham and Coffman (1999:245)

1.5.5 Employees' Empowerment, Training, and Motivational Incentives.

This section delineates the integrations among employee empowerment, training and motivation system.

1.5.5.1   Employee's Empowerment

Empowerment means giving employees responsibilities and authority to make decisions regarding all aspects of product development or customer service. The pursuance of this phenomenon inculcates a culture where individuals learn, grow and develop a personal self-manage. Empowerment encourages employees to participate in decision making (Noe *et al*; 2003: 36). The involvement of employees in decision making, through contributions and suggestions in industrial processes, is considered an element of lean culture (Liker & Hoseus, 2008: 23).

Numerous strategies of empowerment have been developed with the emphasis ranging from individual to team-based approaches. Empowerment studies conducted by Cook and Hunsaker (2001: 258) reveal key constructs that address management/leadership's role in the organizational empowerment strategy which includes:

- o Enforcing a significant shift in the supervisor's power base, away from traditional command and control towards being more of a coach and expert;
- o Developing a 'boundaries management' shift, away from traditional, narrowly defined jobs towards a broadening of competency and overlap between jobs; and
- o Building a learning organization, changing the leadership style towards one based on consensus and influencing through a shared vision. Flattening structures and building culture are also integral parts of this construct.

1.5.5.2   Training and Motivational Incentives

The workplace in South Africa is rapidly changing as a result of changes in value systems, international competition, new technologies and participative management. Poisat, (2006:108) believes that a pragmatic organization needs a strategic empowerment scheme which incorporates progressive employee training and motivational incentives for continuous participation and contributions in the workplace.

Erasmus *et al* (2006: 33) said, 'training is the way in which an enterprise uses a systematic process to modify the knowledge, skills and behaviour of employees to enable it to achieve objectives'. Basic stability in an organization starts with a well trained workforce, therefore, organizations must embrace a culture of lifelong training and pursue efforts to facilitate employees' learning of job related competencies. These trainings capsulate quality-related skills which can help companies meet the challenges of total quality demand and employee performance (Shukla, 2006). These competencies include knowledge, skills, or behaviours that are critical for successful job performance (Raymond, 2008: 5).

Mearns and du Toit (2008) state that organization overall profitability can be negatively affected if adequate training, clear guiding policies, and a well defined work order system, among others, are underestimated. Erasmus, *et al*; (2006: 3) opine that employees involvement/engagement is more likely to increase job satisfaction when employees receive progressive training whose credits are linked with remuneration, promotion or any other forms of reward.

The word remuneration is referred to as tangible and intangible rewards which are received by an employee in exchange for his or her work. The concept of remuneration entails the payment of money and 'fringe benefits' which may include non-monetary payments. The concept contributes to motivating employees to achieve their required outputs at the required standard. Remunerations and benefits need to be perceived as fair and credible (Nel *et al;* 2008: 357, Poisat 2006:138).

1.6   KEY ASSUMPTIONS

Assumptions are conditions that are taken for granted. They are acknowledged as true, though without confirmatory proof (Leedy & Ormrod, 2003:5). In relation to the sub-problems, the following assumptions provide a basis for the understanding of the research as conceptualized;

- o The South African automotive component industry has recognized the fact that organizational transformation is a key element to productivity and competitive advantage;
- o The present-level of organizational principles and strategy of most automotive component suppliers is devoid of world-class continuous improvement principles;
- o Employee participation in and contribution to decision making and the suggestion scheme is underdeveloped and less credible in most South African automotive component companies;
- o Motivational incentives for employees in the South African automotive component industry will raise the current levels of organizational citizenship and commitment in the workplace;
- o The adoption of employee participation and suggestions in decision making in the South African automotive component industry will enhance dedication, productivity as well as organizational success;

- The respondents are well informed and experienced enough to give authoritative feedback on the information sought;
- The adoption of the lean production system and techniques is a paradigm change that will contribute positively to the attainment of a world-class organizational status and transformation among South African automotive components manufacturers;

Given that the Eastern Cape consists of sizeable numbers of automotive components suppliers and service delivery organizations, it is assumed that the results and the proposed strategies of this research will be of great use to the companies in the E.C and also be applicable to other Lean and non-Lean based organizations in all the provinces of South Africa.

1.7 SIGNIFICANCE OF THE RESEARCH

The current downturn in the global economy should be seen as a driver for a new paradigm. This paradigm change involves the rejuvenation of the functions of the organizational strategies that result in a well-defined, all involving engagement, reflecting the cognitive, emotional, as well as, personal citizenship and commitment of employees in the organization. Robinson and Hayday (2003) believe a progressive competitive edge is achieved in an organization where employees are exposed to constant involvement, improvement, training, motivational incentives and engagement.

In the light of the above discussion, the following question is generated: Are South African Automotive Components Manufacturers focusing and implementing strategies that enhance employee involvement in ideas suggestion and submission? In 2003, Gallup Organization and Watson (2003) conducted an international research that measured employee involvement/engagement in various organizations. The result reveals

that a return on investment rose up to nine times higher in organizations with a high engagement score than in organizations with a low engagement mark. It is clear from these findings that organizations that pursue employee involvement principles are likely to have significant world-class continuous improvement and competitive advantage.

This research, therefore, focused on the evaluation and enhancement of employee commitment that will best advance workforce involvement in the ideas/suggestions submission for continuous improvement in the automotive components companies in the Eastern Cape. The outcome of this work will be highly useful in the integration of employee suggestion and contribution processes in organizations in the Eastern Cape and in South Africa as a whole.

Within the University, this work will expand the research work in the fields of organization strategies and employee involvement mechanisms based on related previous research work.

Generally, the research will expose the industrial benefits of the Kaizen suggestion scheme to South African automotive components firms. It will identify causative factors, and proffer corrective measures to the current practice of employee participation and involvement in the suggestion of ideas. The outcome of this research will suggest ways of improving employee suggestion and contributions for continuous improvement in the South African automotive industry.

The research will provide useful information to industrial policy makers, personnel, and institutions on how to improve the competitive edge in automotive components manufacturing and service delivery organizations, through world-class levels of employee participation in the suggestion scheme.

1.8   THE RESEARCH DESIGN

In this section, the methodological approach to be followed in carrying out the research work is described.

1.8.1   Research Methodology

The methodology for this research is structured around the performance evaluation and enhancement of employee involvement in the lean/Kaizen suggestion scheme. The study attempts to determine the extent of participation of the employees of the Eastern Cape automotive components industry in Kaizen suggestion and idea submission within the target organisations. The research procedure will be as follows;

- o A comprehensive literature review will be conducted on various techniques of employee engagement, the Kaizen suggestion scheme, empowerment for continuous improvement in the automotive components industry, as well as the prerequisites for the successful implementation of these techniques for organizational growth;

- o Approaches for the measurement of employee involvement/engagement in the Kaizen suggestion scheme will be identified from related literature, with specific reference to the TOYOTA organization;

- o An interview and questionnaire survey will be the means of data collection. Questionnaires (containing both structured and unstructured questions) will be administered to the thirty three (33) automotive components organizations in the Eastern Cape. Respondents such as the Managers, Middle Management personnel, and shop-floor employees will be requested to rate their organizations against the variables and questions contained in the questionnaire. The empirical study will be used to determine the participation strategies employed within the automotive components manufacturers (ACM) in the Eastern Cape;

- Data from the field survey will be analysed quantitatively and empirically using graphs, pie-chats, bar chats and other relevant tools. Comprehensive propositions that are functional to organizations in advancing world-class levels of the Kaizen suggestion system will be presented.

The research adopted the case study approach with a mixed method of data collection. The mixed method involved both qualitative and quantitative data sets. The main instruments of data collection will be interviews, questionnaires, reviews, and observations. The case study involved the analysis of the Kaizen suggestion-scheme performance evaluation of thirty three (33) automotive components organizations in the E.C. The qualitative instruments (interviews and observations) were concerned with the experiences and perceptions of the participants (shop floor employees, middle management and the top management). The quantitative instruments (questionnaires) are concerned with issues relating to the ranking of suggestion scheme indicators as identified in the literature. Each of the data collection methods was considered part of an overall approach towards improving the quality and validity of the research data through an approach called triangulation.

Based on the findings of the study, a conceptual strategic blueprint was proposed to guide management in making decisions concerning the improvement of employee involvement in the suggestion scheme. The role of the quantitative data throughout this research is to support the qualitative findings.

1.9   The structure of the thesis

This thesis is divided into seven (7) chapters.

Chapter 1 begins with a section introducing the research setting, problems and sub problems. The chapter then introduces the

formulation of the problem, the statement of the problem and sub-problems. These are followed by a discussion of the research aim, objectives, justification and outline of the methodology. The chapter concludes with a delimitation of the scope of the study, the key assumptions and the structure of the thesis.

Chapter 2 comprises the review of employee empowerment and participation in the suggestion scheme, with specific bearings on the world class manufacturing paradigm. Furthermore, an in-depth review is done on the lean/Kaizen concept and its bearing on employee empowerment/participation in ideas suggestion and submission. This chapter ends with a wrap-up of the key research problems to be addressed by the study.

Chapter 3 introduces the theoretical drivers of the research which are anchored on the concept of empowerment and participation. The chapter further evaluates the underlying concepts of organizational culture, commitment, citizenship, and motivation. This chapter concludes by re-stating the aim and objectives of the study and further establishes why the problems identified in the research exist.

Chapter 4 describes the methodology adopted for the conduct of the research and the underlying concepts in the choice of research instruments. The chapter evaluates the various philosophical constructs and research paradigms and then justifies the philosophical position and methodology of this research. The chapter concludes by describing the research design/strategy, data collection instruments and consequent validity.

Chapter 5 presents an analysis of the thirty three (33) case study organisations in the Eastern Cape of South Africa. The chapter further

presents data, analyses and discussions of research results. The chapter is further expounded in chapter six with series of comparisons of means and internal reliabilities of the variables.

Chapter 6 delineates the descriptive analysis of the independent variables using Cronbach's Alpha coefficients of the variables. The comparisons of the summated scale with the organizational size were done in conjunction with the t-test (2-tailed). This is followed by the development of a conceptual graphical evaluation process based on the balanced scorecard and research findings.

Chapter 7 presents an overview of the research, the summary of findings, conclusions and recommendations. Consideration is also given to the research limitations, contribution to knowledge and areas for further research on this topic. The structure of this thesis is diagrammatically represented in figure 1.3.

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│          Chapter 1              │
│         Introduction            │
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│          Chapter 2              │
│  The case for Employee Empowerment │
│        and Participation        │
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│          Chapter 3              │
│ Drivers of Employee Empowerment and │
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│          Chapter 4              │
│    The Research Methodology and │
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│          Chapter 5              │──────┐
│ Analysis and Interpretations of data │      │
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│       Chapter 7         │◄───│  Further Analysis and │
│ Summary, Conclusions and │    │ Interpretations of data │
│    Recommendations      │    └────────────────────┘
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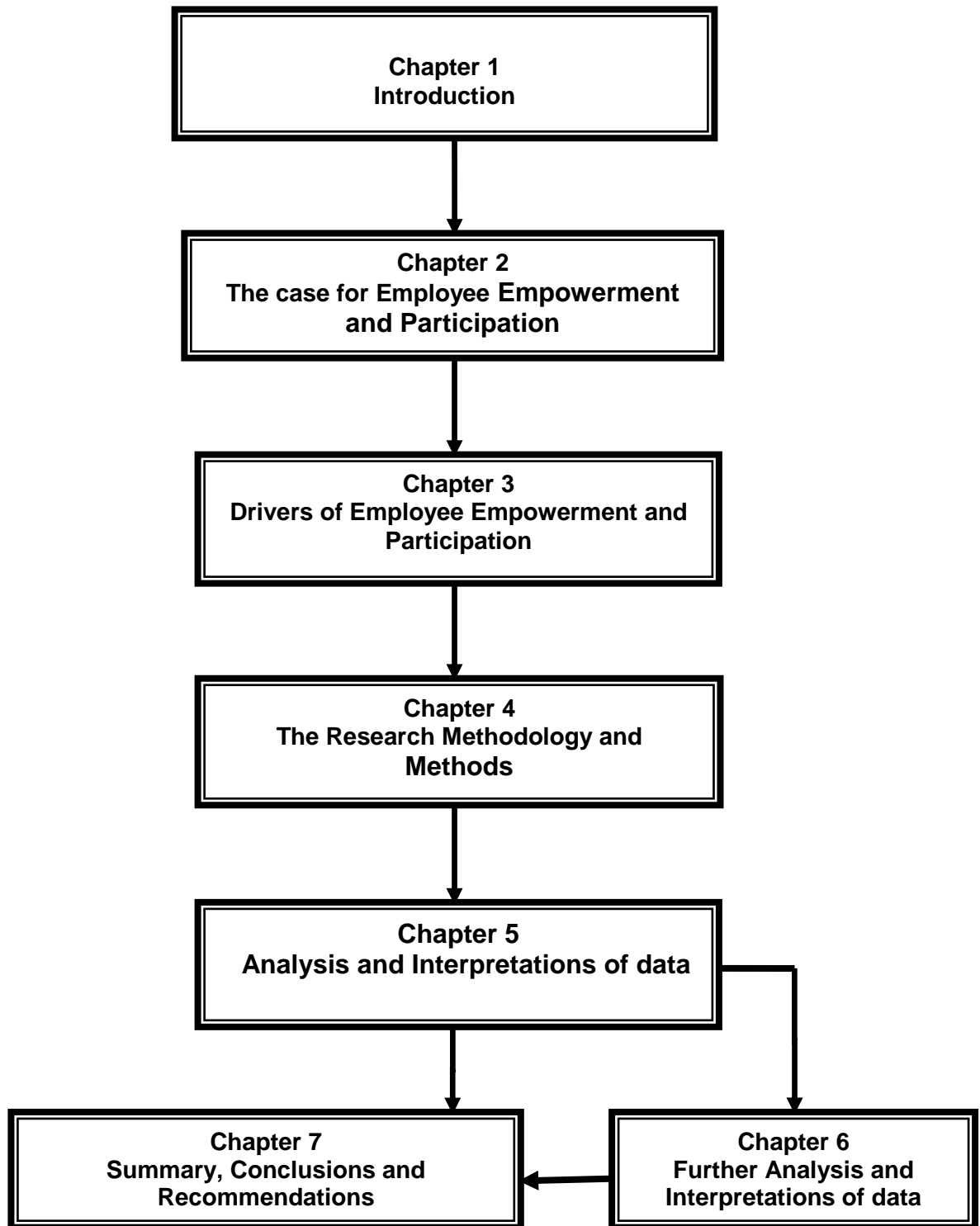
Figure 1.3   The graphical representation of the thesis structure

Chapter 2 : THE CASE FOR EMPLOYEE EMPOWERMENT AND PARTICIPATION IN THE SUGGESTION SYSTEM

2.1   Introduction

Encumbrance to cross-border trade and investment is declining within the global phenomenon, however, advancement in transportation and telecommunication technology is enhancing a culture where economies are merging into an interdependent global economic system that is simply referred to as the global village (Hill, 2003:18).

Globalization has fashioned both industrial opportunities and challenges for local and national industries as well as a new functional approach in organizational processes. Fallah and Lechler (2008) opine that the national industries competing in the global market need to initiate innovations across all the operational levels and processes so as to address the emanating opportunities and challenges for onward competitive advantage.

Raymond, (2008:6) asserts that the global village in which organizations vie provides the momentum for exploring alternative approaches for achieving a competitive advantage. In recent times, there has been renewed interest in determining how the competitive advantage may be /achieved by focusing on the empowerment and participation of personnel in production processes and decision making in organizations. In other words, the competitive advantage is better attained when an organization gives appropriate attention to human assets (Ray, 2003:1). This is corroborated by the tenet of William J. McEwen, a marketing and global-practice leader for The Gallup Organization, which says:

''The most recurrently discussed company assets are those that are represented by or have been established through the traditional

'four-Ps' of marketing (that is) product, place, promotion, and price. Candidly, the assets related to these categories are worthy integral backbone of organizations; However, there is a fifth 'P' of people or human capital'' (McEwen, 2001).

It is inevitable therefore for organizations that are repositioning for the global competitive advantage to pursue a comprehensible strategy that is focused on improved organization structure, employee' empowerment and participation in the suggestion system, training and quality assurance; among others (Karakoc & Kucukyilmaz, 2009). It is generally accepted that employees are a precious resource and catalysts to organizational productivity and growth; hence, the success and organizational democracy of any company is directly linked to the engagement and participation of its employees (Ladd & Marshall, 2004). Robinson and Hayday, (2003:1) opine that organizational democracy and empowerment are better achieved when employees become more invested in their organizational functions and are provided with more-say as to how those functions will and should be realized.

Furthermore, McClenahen (2003) citing Potochny, (1998) discourses that empowerment occurs when employees are instilled with the capability to run through challenges in an atmosphere of trust and self-responsibility. Therefore, working in a participative environment impacts workers' satisfaction and productivity more positively than being involved simply in a stereotypical production process and decisions scheme. Empowerment and adherence to the culture of participation create a continuous world-class improvement that is associated with increased organizational citizenship, motivation, loyalty, productivity, job satisfaction and customer's satisfaction (Leibowitz, 2003).

This chapter delineates employee empowerment and participation in the Kaizen suggestion system in relation to world-class manufacturing. The researcher traces the various theoretical constructs on which employee participation in the Kaizen suggestion scheme is based. The traditional and modern approaches to employee participation, commitment, motivation, organizational citizenship behaviour, self-efficacy and emotion are also considered so as to determine the fundamental drivers that impact on employee empowerment and involvement in the suggestion scheme. Important drivers that showed a strong correlation with continuous improvement and engagement are also discussed in the subsequent sections.

2.2 The World-Class manufacturing paradigm

Empowerment is a concept that has been around since the dawn of mankind. However, the role it plays in organizations and corporate advancement is dated back to the early 1950's when Dr. W. Edwards Deming and Dr. Joseph M. Juran of the United States of America visited Japan to coach and mentor industrial leaders. The call for Deming and Juran to help Japan with industrial rejuvenation was born out of the need for Japanese automotive manufacturers to discover improved ways to compete in quality. Dr Deming and his team reconceptualised quality through workers' involvement and empowerment. They introduced the lean principle based on continuous improvement and engagement as a new organizational strategy in the Japanese automotive industry (Womack *et al* 1991: 7; Dahlgaard-Park, 2000:128).

It is significant to note that prior to the visit of Drs Deming and Juran to Japan, quality was not a major concern in the American and Japanese automotive industries. The traditional practice entailed the assembly workers pushing themselves to complete as many products as possible while problems associated with quality were only remedied when the

automobiles rolled off the assembly line. The assembly line stopped only when the supervisor found a sufficient reason, which was very rare. Suffice it to say that no employee on the assembly line had the autonomy to stop the line. They were weighed down by the fear of job loss if they failed to meet their production quota. This was a production process after the order of the American mass production (Womack *et al*; 1991:10).

By the 1960's, the Japanese had learned to use human capital more carefully and placed an aggressive focus on employee's training. Employees were considered a fixed asset. Workers were given workplace autonomy, which contributed to high quality. Thus working in these participative work environments impacted the Japanese employees' satisfaction and productivity more positively than being involved in purely stereotyped decisions (Spartz, 2000: citing Ripley & Ripley, 1992).

Spartz (2000) states that in the 1970's, the United States of America encountered an extensive loss of market share in many industries and product lines in spite of superior productivity. By then, the Japanese automotive industry had experienced a turn-around through their pursuance of total quality management, workers' commitment, empowerment, and the adoption of lean principles in manufacturing and service delivery (Smalley, 2005).

The rapid competitive edge and industrial revolution in Japan motivated and ushered in a sense of new development and revitalization in quality and lean production principles in the American business sectors. Deming and Juran were brought to the forefront, in the 1980's, to teach some companies in the U.S what they had taught Japanese companies decades before. The training consisted of ''making all management

employees trained and aware of people and processes that made quality happen'' (Spartz, 2000: citing Ripley & Ripley, 1992).

The late nineteenth century showed a combination of the old and new production systems. Innovative organizations captured the benefits from the mass production technique and the Japanese lean production principles with the pursuance of a new paradigm of quality, variety, customization, convenience and timeliness. Empowered and interdependent work teams replaced the old type of workforce (Smalley, 2005; Shaukla, 2006).

This manufacturing principle (the Japanese lean production systems) incorporating the use of a service or manufacturing technique that is aimed at the maximization of productivity, creation of flexibility and facilitation of a culture of continuous improvement is suggested by Leibowitz (2003) as the bedrock of the world-class production system (WPS). This production system is seen as an organizational process that is able to strike an effective balance between the element of standardization and the innovative forces represented by innovation and continuous improvement–Kaizen (Neagoe & Klein, 2009). World-class manufacturing is hinged on the pursuance of competitive benchmarking through goal settings. This facilitates the achievement of high levels of proficiency that has a bearing on the strength, weakness, opportunities and threats within the organization and the global competitors that are rated best in class (Johnson & Scholes, 2002:156; Spence, 2006: citing Maskell, 1991:309).

World class organizations are characterized by the adoption of total quality production and corporate improvement strategies that encourage the overall satisfaction of customers and empowerment of employees. The organizations that have reached this phase are always in search of continuous innovative moves, in order to improve their products and

services, and thereby sustain their competitive edge in the global market (Johnson & Scholes, 2002:157; Sharma, 2005).

The present economic doldrums has created an atmosphere where organizations are incessantly searching for ways to increase competitiveness as a means of survival in the global economy. The search, caused by the various winds of change have forced companies which have been restricted to local and national markets to move to an arena where competition is at the global level. Suffice it to say that global competitors are numerous and competition is demanding because of the dynamics of the consumers' taste for quality (Karakoc & Kucukyilmaz, 2009; Poisat, 2006:132).

Liker & Hoseus (2008: 23) concur with Hiam (2003: 7) that organizations need to implement new strategies in reaction to the changing economic environment which does take account of employees in the nitty-gritty of organizational processes. This business and technological paradigm therefore necessitate a vibrant and efficient organizational strategy that is entrenched within a useful and resourceful, flattened structure that has shifted from the bureaucratic and hierarchical traditional system, to a participative, innovative, learning, decentralized and organic system (Swanepoel *et al*, 2008: 397).

Hiam (2003:7) cautions that an organization that acquires a mediocre culture will always tread a strategic path where there is a lack of understanding between the upper echelons of the management and employees at the lower level regarding the need to respond to an all-inclusive decision making.

Liker & Hoseus (2008: 21) hold the opinion that the traditional organizational culture is at complete variance with the Toyota culture of

the*'human system'*. This thought was buttressed by the result of the rigorous cultural quantitative studies of cross national culture carried out by Geert Hofstede and his team. The work of Hofstede involved a number of surveys, interviews and observations in over seventy five countries. The research identified five primary dimensions that differentiate national cultures. These dimensions are:

1. **Power Distance:** This is the extent to which the less powerful members of the society expect and accept that power is distributed unequally. It is the degree to which the people, at the bottom of the hierarchy, accept that there is a power imbalance. The Hofstede study showed that neither the U.S nor Japan stands out markedly on this dimension, compared to the World average. The U.S being below the average means that individuals near the bottom of the power hierarchy do not accept inequality. This is an active challenge to the spread of standardized work and aggressive targets from the top echelon.

2. **Individuality:** This continuum is 'collectivist' in nature. It is the extent to which individuals are integrated into groups. In collectivist organizations or societies, the individual belongs to highly cohesive groups that protect the individual in return for unquestioning loyalty to the group. The United States is one of only seven countries with individualism at the highest level of value. Japan is much more of a collectivist society hence the Japanese appreciation of team work. This discovery explains why Toyota Company emphasizes team work.

3. **Masculinity:** This refers to the degree to which the society is dominated by male values that have particularly assertive and competitive orientations. The Hofstede research shows that both U.S and Japan are above average on masculinity. Liker and Hoseus (2008:22) opine that Toyota grew in male domination while women

played subordinate roles, but this has recently changed in Japan. Small proportions of women, today, function in professional roles as engineers and managers. The masculine values of Japan are contributory factors to the strong value of competition within Toyota

4. **Avoidance of Uncertainty:** This addresses the society's tolerance for uncertainty and ambiguity. Societies strong in this category are uncomfortable with unstructured situations and prefer structures such as strict laws and rules. Japan is near the top of the world on avoidance of uncertainty while U.S is below average. It is not surprising that the strict structure of standardized work seems natural for Toyota in Japan while Americans express reservation or fears of becoming shackled by rules and standards.

5. **Long Term Thinking:** This is related to countries that have long term orientation values, thrift and perseverance. The foundation of the Toyota way model is long-term. Patience and perseverance are both highly valued within Toyota. Liker & Hoseus (2008: 22) observe that the biggest struggle in American companies, wishing to learn from the Toyota way, is their short-term orientation and need for every action taken in the name of lean to pay for itself very quickly.

The result of the average rating of data on these dimensions for the United States of America, Japan and the World is represented in Figure 2.1.
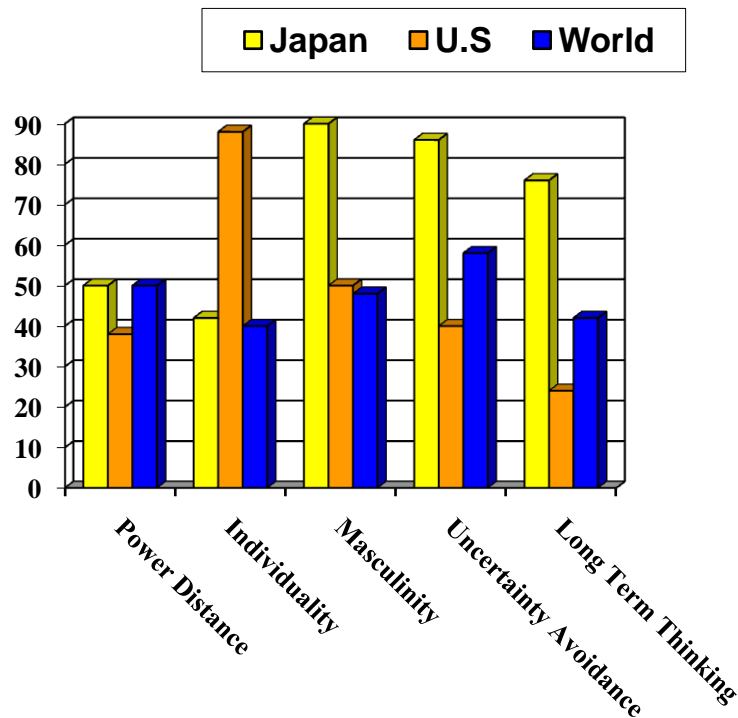
Figure 2.1   Hofstede Cultural Scores for Japan, U.S and World

Source: Liker & Hoseus (2001:21).

Swanepoel et al (2008: 397) opines that an organization's strategy needs to enhance organizing around processes rather than functions, use of work teams, less emphasis on 'command and control' and flexibility in all aspects of its organizational processes so as to be able to compete favourably in the changing world economy.

Substantial research in the development of organizational change has been entrenched in the work of Lewin and his unfreezing-moving-refreezing model (Dennis, 2002:89; citing Lewin & Gold, 1948).

According to Dennis (2002:89) and Schein (2004), the unfreezing state involves the development of a motivation strategy and measures for all-round transformational change in the organizational system. The moving

stage involves strategic streamlining and reformation of employees' perspectives and development, while the refreezing stage involves reinforcing and integrating the change within the new paradigm.

The ever-changing global markets have had a significant influence on the nature of work and the demands placed on employees. Under these conditions, companies have to design and shape their organizational structure, management understanding, company competences and outputs according to new competition conditions in order to attain a competitive advantage (Karakoc & Kucukyilmaz, 2009).

Johnson and Scholes (2002:15) indicate that organizations need a quality management strategy that resolves its immediate direction and its long-term position. These organizational strategies must revolve around total quality management (TQM) with a focus on effectiveness, organizational change, managerial styles, information technology, improved production processes, quality assurance and the development or empowerment of personnel. TQM, as explained by Olivier (2007, citing Besterfield 1998:458) is an organizational philosophy and a set of guiding principles that symbolize the groundwork of a continuously improving organization. It is an established technique to guarantee continued existence in a world-class manufacturing and organizational competition.

Dr Deming began his work in Japan shortly after the World War II. As a statistician, he initiated the Japanese in the adoption of statistical analysis in manufacturing and how to employ the resulting data to control quality during manufacturing. The statistical measures and the resulting quality control concepts, fuelled by the Japanese work ethics, soon became a new paradigm for the Japanese industries. The new concept of production eventually became the core of total quality

management (TQM) principles (Dahlgaard-Park, 2000: 127-128; Smalley, 2005; Schonberger, 2007).

Total quality management focuses on Deming's fourteen points foundational philosophy. Slack et al (2001:674) identify these fourteen action-points for quality improvement as follows:

1. Create consistency of purpose
2. Adopt the new philosophy
3. Cease dependence on inspection
4. End awarding business on price
5. Improve consistency in the system of production and service
6. Institute training on the job
7. Institute leadership
8. Drive out fear
9. Break down barriers between departments
10. Eliminate slogans and exhortations
11. Eliminate quotas or work standards
12. Give people pride in their jobs
13. Institute education and self-improvement programmes
14. Put everyone to work and accomplish it.

TQM is an effective organizational system for integrating quality development, quality maintenance and improvement effects of various groups in an organization. The adoption of TQM encourages quality productions and services at the most economical levels, with attendant customer and employee satisfaction. It is a crucial component of world-class manufacturing and service delivery (Schonberger, 2007; Spence, 2006).

TQM is not only concerned with improving quality, it is also concerned with the improvement of all features of operational performance and particularly how this improvement should be managed (Slack *et al*; 2001:674). TQM was very popular and highly rated as a possible solution to a company's poor productivity and quality associated problems in the 1970s and 1980s; however, this popularity has dwindled (Smalley, 2005).

Research has shown that there are more situations where TQM has failed to resolve industrial problems than where it has helped them. The failures were attributed to the limitation or restriction of leadership strategies in TQM to the upper echelon in the organization structure while employee involvement and empowerment strategies were relegated or given no credence. Managers focused mainly on employees to produce the desired output while workers' suggestions and contributions, development, training, well-being and intrinsic motivational concept were neglected (Slack *et al*; 2001).

The next section delineates the concept of lean production systems and their bearings on employee's empowerment and participations in a world-class continuous improvement and organizational competitive advantage.

2.3   Lean and its bearing on employees' empowerment and participation in the suggestion system

Lean brings about changes in the way people relate to processes within an organization. Lean production entails a management philosophy that focuses on the elimination of waste, the maximization of the quality of products and the increased flexibility inherent in the process (Shukla,

2006). By eliminating waste (Muda), quality is enhanced while production time and costs are compressed (Jordan & Michael, 2001).

The lean concept enhances the achievement of tasks along the value stream so that products proceed from design to launch and order to delivery, with no stoppage, scraps or backflows (Jozaffe, 2006: citing Womack & Jones, 1996:306).

The word "Muda" is a Japanese term that is used often when implementing lean. Muda means waste and it applies to any manufacturing activity that absorbs resources but does not add value to the final products. Finished goods and services that do not meet the customers' requirements are also classified as a type of lean waste. (Dahlgaard-Park, 2000:128; Campbell, 2006:48: Womack & Jones 1996:15).

Anderson (2007) states that it is important to realize that lean production is not just a successful concept and tool that organizations can apply and anticipate success at one go. Lean is a way of thinking that needs to be inculcated into the organizational culture. It is the generic name for the operation strategy in manufacturing capacity while lean enterprise is the total function of lean concepts and philosophies throughout all aspects of the business (Womack & Jones, 1996:16).

The Lean philosophy is lean because it provides a way to do more and more with less equipment, less human effort, less time and space. The Lean philosophy strives to proffer clients exactly what they desire, thus, creating the capacity to produce more if the manufacturing capability is able to take in an increase. Drickhamer (2006) believes that lean thinking starts with a conscious attempt to define value precisely in terms of specific products with specific capabilities offered at specific

prices through a dialogue with specific customers (Schonberger, 2001:40).

Smalley (2005) says that lean production has considerably raised the competitiveness of numerous manufacturing companies as well as the value they deliver to their end users. This concept of manufacturing encompasses the manufacturing concerns of implementation tools such as, just-in-time (JIT), six sigma, economic value added (EVA), the 5s, preventive maintenance, Toyota production systems (TPS), the 20 keys, Kanban (the pull production), value stream mapping, single minute exchange of dies and team-based problem solving.

Spence (2006: citing Walton, 1991:190) opines that the TQM apparatus is designed to maximize the efficiency of resources so that more is achieved with no increase in resources. Lean practices enhance continuous improvement but can only be implemented in an organization that has a fundamentally stable base to initiate these tools.

2.3.1 The Employee suggestion scheme – Kaizen Teian

The suggestion box has a history going back over a hundred years. The first recorded suggestion programme was implemented in 1770 by the British Navy. They realized the need for the practice of listening to every individual in the organization without fear of reprisals. At that time, the mere mention of an idea that contravened an admiral's opinion was likely to be punished by imprisonment or by hanging (Mark, 2001).

The first physical box, for the gathering of ideas, appeared at William Denny & Brothers shipyard in 1880. It was intended to collect ideas from all employees and pay a fair compensation for each implementable idea. This approach, called a suggestion scheme, spread rapidly following government's reports on the venture's success. The

government's recognition of this scheme brought about a widespread realization that employees had valuable ideas but that management structures tended to prevent these ideas from spreading through the strata of organizations (Arthur & Aiman-Smith, 2001; Mark, 2001).

Today, most people have some experience of suggestion boxes, from customer-centred boxes in retail outlets, to the classic employee suggestion box. However, the suggestion box concept has been found to be encumbered by deficiencies; hence, the evolution of the idea of a management system (Mark, 2001). Swanepoel et al (2008:511) concur with Mark (2001) that the idea of a management concept is mutation of the hundred-year old principles of the simple idea box. However, it is a third generation idea collection system featuring a structured review and workflow process that ensures idea generation and development processes, aligned with current and future business needs (Miller, 2003).

Many organizations have attempted to implement suggestion systems but they often fall short of achieving their potential. Fairbank et al (2003) think that, in many instances, firms have simply mounted wooden boxes on the walls, in a common area without a structured management technique for its handling. On the other hand, some firms have failed to motivate employees to participate because of the absence of compensation or reward of any type for participants, lack of proper education of the employee on the processes of the scheme and long delays in getting the suggestions processed (Robinson & Schroeder, 2004:107-111; Fairbank *et al*, 2003). A standard suggestion flow chart and evaluation format are shown in figures 2.2 and 2.3 respectively.

The employee idea management flow chart shown in figure 2.2 illustrates the sequence involved in the suggestion and evaluation of

41

ideas. Idea suggestion and evaluation starts with the categorization and ranking of the observed and identified problems. The perceptiveness of the problems is followed by the development of ideas and the suggested solutions. Suggested ideas are expected to be submitted through a designated medium and evaluated by the evaluation department. A perceived contributory idea is adopted and rewarded while those with lesser values are recommended for a further scrutiny or utterly rejected. A typical suggestion evaluation sheet is shown in figure 2.3.

Idea management is the process of collecting business ideas, developing the ideas into implementable concepts, evaluating and selecting the top concepts and measuring performance. Web-based or e-mail systems are integral ways of idea generation and evaluation in idea management. The web-based tools help in facilitating decision making. The concept of idea management, founded on the platform of employee suggestion system (ESS), is a derivative of the Japanese system called Kaizen Teian. The word 'Teian' means proposal or suggestion; hence Kaizen Teian conceptualizes a continuous improvement of the standard way of work through the submission of creative and problem solving ideas by the employees (Miller, 2003). It is a bottom-up activity and a companywide system for implementing continuous improvement proposals from employees (Neagoe & Klein, 2009).

Swanepoel et al (2008:515) state that the ESS is an incentive scheme under which employees receive rewards for useful ideas that lead to cost reduction, improved safety or safety and increased organizational effectiveness. The system motivates employees to submit creative ideas through the suggestion system, thereby providing an interactive networked forum within which employees and interested stakeholders can openly debate their merits (Miller, 2003; Fairbank, et al; 2003;

Swanepoel *et al*, 2008). It is a critical mechanism for transforming the content of individual level of knowledge and contribution into organizational change (Arthur & Aiman-Smith, 2001).

Perceptiveness: The problem(s) is observed, identified, categorized and ranked.

Idea/Solution Development: Determine problems' causative factors

Suggested Solution: The suggestion is written and deposited in the suggestion box

The suggestion is picked up by plan personnel

The suggestion plan coordinator screens the suggestion for eligibility, sends acknowledgment to suggester, post log, files and types suggestion.

The suggestion is sent to the department supervisor for evaluation

The suggestion is evaluated by the department supervisor

Completed evaluation is returned to the coordinator who then forwards suggestion and completed evaluation to the administrative officer

Completed evaluation is sent to management engineering.

Management engineering re-evaluates the suggestion

The suggestion is returned to the coordinator with recommendations for adoption, rejection, or further study.

Rejection

The coordinator sends a rejection notice to suggester with reasons.

Further Study

The coordinator sends a delay notice to suggester with reasons.

Adoption

Adopted suggestions are forwarded to the award committee.

Awards are determined by the awards committee

The coordinator relays award information to the suggester and arranges for payment.

The awards payment is made to the suggester.

Figure 2.2   Employee Suggestion System flow Chart

Source: Adapted from Bueno & Bridges (1985).

```
                                        Suggestion No. .......................
                                        Date..........................


To:.........................................................Dept..................................

The attached suggestion is from an employee who believes his or her idea
represents constructive thought. Please investigate urgently, answering all items
below and adding such additional information that will assist the committee in
deciding the value of the suggestion.

1. Do you recommend adoption of this suggestion?        Yes.......  No......
2. Is further study required?                           Yes.......  No......
3. Does this suggestion prompt any action on the situation?  Yes.......  No......
4. Has all possible areas of application of this suggestion
   in your department been considered?                  Yes.......  No......
5. Will this suggestion be applicable to other divisions
   or departments?                                      Yes.......  No......
6. If so, which department?.............................................................
7. Have they been notified?                             Yes......  No......
8. Show reasons for your decisions. If not adopted, explain in detail so that the
   suggester will understand the reasons for the rejection. Use the reverse side
   if necessary.

        _____
        _____
        _____
        _____
        _____
        _____
        _____
        _____
        _____
        _____
        _____
        _____

9. Calculate savings that would result from this suggestion implementation.
        Annual Gross Savings:    Materials ......................................
                                 Labour ......................................
                                 Total   ......................................

                         Estimated Cost        ........................
                         Annual Depreciation   ........................
                         Interest              ........................
                         Other Costs           ........................
                         Total Annual Cost     ........................
                         Net yearly Saving     ........................

  Signed...............................................................Date..........................
                    Investigator
```

Figure 2.3   Suggestion Evaluation Sheet

Source: Adapted from Bueno & Bridges (1985).

Kim (2005) argues that the benefits resulting from the ESS can be classified as cognitive benefits, which are positive outcomes pertaining directly to productivity; and the affective benefits of increased employee morale, increased job satisfaction, reduced grievances, turnover and absenteeism. The Suggestion submission is based on the utilization of forms that employees can use to write out their suggestions and deposit them in conveniently placed boxes for submission and evaluation by management or a designated committee.

Swanepoel et al (2008:515; citing Marx, 1993:3) caution against the use of casual suggestion boxes and suggest the following criteria for a formal suggestion scheme:

- o accepted suggestions must relate to a specific problem or opportunities to improve processes or situations;
- o a suggestion must provide a solution or possible strategy and not a complaint;
- o suggestions should be in written form and must be signed by the employee;
- o written suggestions must be received and registered by the management or designated office; and
- o the scheme must be recognized and accepted by the top management.

Robinson & Schroeder (2004:37) concur with Arthur & Aiman-Smith (2001) on the 1985 survey of the national association of suggestion systems which revealed that plant employees made a total 495 suggestions during the four- year period of the study, giving rise to an average of approximately 10 suggestions per 100 employees per year. In that same year, the average Japanese worker gave in more than 30 ideas per person. At Toyota, each year the 67,000 employees submit

approximately 700,000 cost-saving improvement ideas (10 ideas per employee per year) with over 99% of the ideas implemented (Miller, 2003)

The next segment of this section deals with the core operational nitty-gritty of continuous improvement as represented in the Kaizen principles of a lean system.

2.4   Continuous improvement (Kaizen)

The term Kaizen is a Japanese compound word that depicts continuous improvement. Slack et al (2001:611) indicate that Kaizen deals with the adoption of premeditated approaches to improved performance which assumes more and smaller incremental improvement incorporating the all-inclusive participation and suggestion in an organization.

The two key features of kaizen are incremental, but continuous improvement and involvement of the entire workforce in organizational processes. The workforce, therefore, needs to participate in producing small but frequent changes by making suggestions for improvement in both process and product (Ohno *et al*, 2009).

The Kaizen concept is not just a management technique but also a philosophy that teaches how a human should conduct his or her life. It focuses on the way people approach work. It shows how management and workers can change their mindset to improve their productivity (Ohno *et al*, 2009). Kaizen requires patience, openness to change, shared goals between management and employees, trust in others, teamwork, job security and interest in learning and growth (Slack et al, 2001:612).

The inception of this Japanese (Kaizen) phenomenon dates back to the era shortly after the World War II. In 1950, Eiji Toyoda, an engineer from the Toyota Motor Company visited one of the Ford plants in Detroit to study the automobile plant in an exchange programme between the United States of America and Japan. The reaction he got from the final assembly line was that everything in the line was moving along in a smooth and synchronized pace. But Eiji noticed that this was just the case along the line. Virtually, parts were produced in discrete large batches with the attendant result of huge amounts of inventory, wasted motions, materials, time and effort (Nicholas & Soni, 2006).

On his return to Japan, Fiji with the help of Taiichi Ohno completed and developed procedures and modifications for an improved production that enhanced equipment multipurpose, and was movable and easy to acclimatize to producing a range of different parts for different products. They developed the capability to produce the parts efficiently in small batches, when needed, and synchronized the whole production, not just the final assembly line. This development brought about a considerable reduction in time-line by removing the non-value-added wastes. The 1960s and 1970s experienced a spread of the new concept to suppliers and other industries in Japan (Dennis, 2002; Nicholas & Soni, 2006; Liker 2004).

The fundamental process of continuous improvement, recognized by Dr. Deming, is hinged on the fact that managers and employees should unequivocally 'PLAN' the improvement of the production process such that main sources of disparity are targeted for control followed by the implementation (DO) of the selected solution. This level is expected to be followed by a phase of monitoring (CHECK) to make certain that the solution has created the desired improvements. The productive ideas are then spread across the business (ACT). Deming believes the

spreading of this procedural feat from one business to another allows a second cycle to be achieved for the standardization of factory approaches and performance levels (Olivier, 2007: citing Rich, 1999:42). The Deming model, a representation of the Deming cycle for continuous improvement, is shown in the figure 2.4.
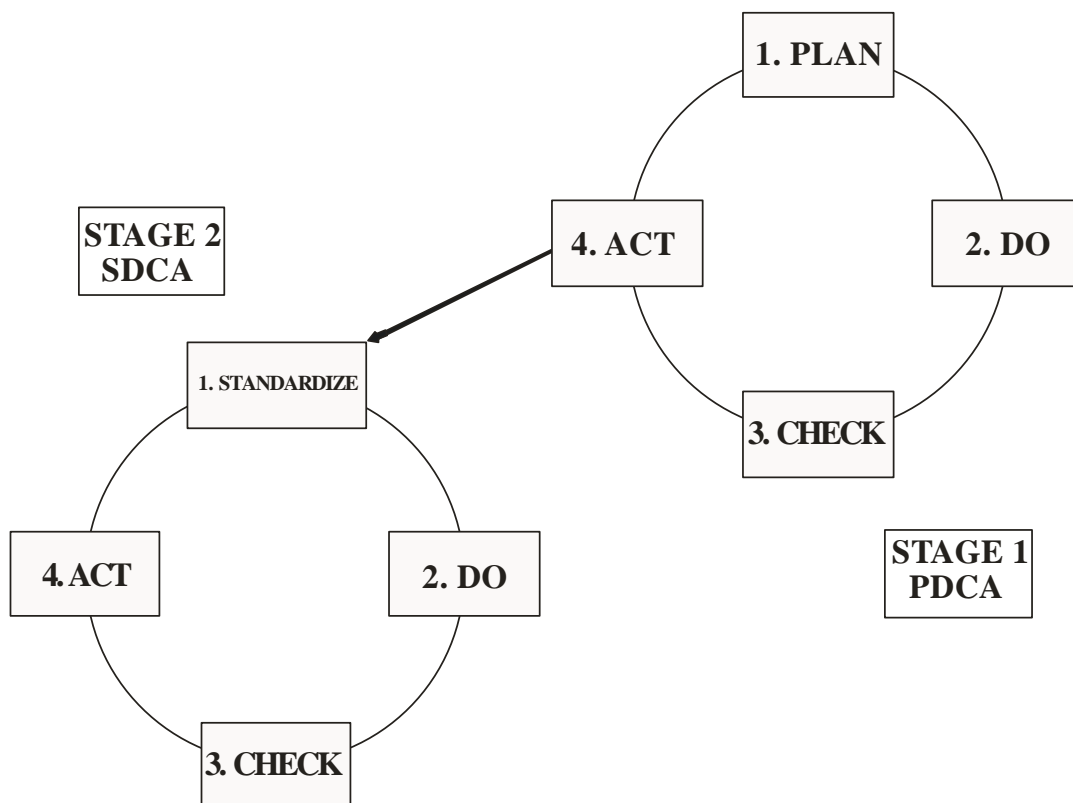
Figure 2.4   The Deming Cycle

Source: Rich 1999: cited in Oliver, 2007

It is important to note that continuous improvement principles are not complete and achievable without a well-crafted employee participation and involvement strategy in the workplace. Employee participation refers to a broad variety of policies, mechanisms, and practices that facilitate employee participation in decision-making, frequently at the

level of the enterprise or workplace (Ito, *et al*; 2001; Kawakami, *et al*; 2004).

Koningsveld et al (2005: citing Wilson and Haines,1997) define participatory ergonomics as the involvement of people in the planning and controlling of a considerable amount of their own work activities, with adequate knowledge and power to influence both processes and outcomes in order to achieve desirable goals. This definition is equally pertinent to the spread and use of participatory methods in workplace improvement.

Participatory methods are increasingly utilized in improving the ergonomic aspects of work and workplaces. The intrinsic worth of these methods is widely recognized as a means of promoting the initiative of employees and achieving workable solutions and productivity (Zalk, 2001). A notable merit is that participatory concepts contribute to the improvement of the workplace in their diverse conditions (Kawakami et al, 2004; De Jong & Vink, 2002; Koningsveld et al., 2005). De Jong and Vink (2002) indicate employee participation as a function of the continuous improvement (Kaizen) system. The next section iterates the principles of the Kaizen/lean system.

2.5   The 5 Principles of Lean Production

In the book *The Machine that Changed the World,* Womack et al (2007:17-19; citing Womack & Jones, 1996:70-72), delineate the five principles of the lean philosophy in the organizational continuous improvement strategy. The principles are:

1. **Specify value from the point of view of the customer*.***

The critical preliminary point of lean thinking is value. Lean thinking for world-class improvement starts with a conscious attempt to define value precisely in terms of specific products and how best to produce these products. This means that the customer buys results, not products, and that companies need to identify and begin product design and manufacture by focusing on what their customers require and want. It is as simple as the old slogan *"give the customer what they want"* and not what is convenient for the manufactures (Schonberger, 2001:8).

The purpose of lean organizations is to search always and constantly for the most excellent economic use of their assets as new paths is pursued. Organizations need to think of 'what does' and 'what does not' create value from the customer's perspective and not from the perspective of individual firms, functions and departments.

2. Value Stream.

Value Stream techniques focus on one object or product in the company and not just the departmental viewpoints or process steps alone. The principle is to focus on the whole supply chain, from customers' orders, to the planning department, the ordering of raw materials from different suppliers, and then the value adding steps for the product. Emphasizing economics of time rather than economics of scale is very crucial in the value stream. Value is added to a product while someone is working on the piece. The non-value adding steps are achieved when the product is waiting in batches or stocks. This is considered a waste.

3. Flow.

This principle describes the importance of product movement through one value adding step to the next level; thereby creating a constant one-piece flow for the product without interruption, detours, backflows, waiting or scraps. Companies should avoid batches and queues, or at

least continuously reduce them and never replace a value adding step by a non-value adding step.

4. Pull.

Pull means meeting the consumer's rates of demand with production but not over producing. Most organizations will have to push to a certain point and respond to a final costumer from that point. The idea with lean is to push this point as far upstream in the product making process as possible, wait for a demand and then make the product fast and with high quality. So if the delivered products have any defect, only a small batch of products will have been affected.

5. Perfection.

The last principle seems more possible after the other four principles. Companies must strive for perfection by continually removing successive layers of waste as they are uncovered. Perfections does not only mean quality, it also means producing exactly what the customer wants, exactly when they want it, at a fair price and with minimum waste.

2.6 Toyota's 14 Principles of Lean Production

A number of companies have used the five principles and tailored them conscientiously but without a real and positive attitude behind the implementation. Liker & Meier (2007) suggest that it is important for organization to give consideration to changes in the employees' attitudes to quality in order to attain a material flow containing only value adding operations.

Fujio Cho, president of the Toyota Motor Company is cited in the book *The Toyota Way* (Liker, 2004) as saying, "The key to the Toyota Way and what makes Toyota stand out is not an individualistic element. Reasonably, what is important is having all the elements together as a system. This concept must be practiced every day in a very consistent manner and not in spurts." The Toyota 14 principles are:

1. Base Your Management Decisions on a long-Term Philosophy, Even at the Expense of Short-Term Financial Goals – This is the foundation for all other principles. All decisions should be taken so as to generate value to the company, its employees, the customers and the society as a whole. This principle should be the starting point, not just for product/service design efforts, but for every function in the company. All managers must take responsibility. The job should be a mission first, followed by earning a pay cheque.

2. Create Continuous Process Flow to Bring Problems to the Surface – Flow means reducing all the time that a product or item is waiting for someone to work on it. Reduce all the non-value added time and make a one-piece flow. The benefits of the one-piece flow are that it builds in quality, creates real flexibility, creates higher productivity, frees-up floor space, improves safety, improves morale, and reduces the cost of inventory. Flow is one of the keys to the true continuous improvement process and people's development. Everyone is forced to solve the problem, so team members have to think and through thinking, team members grow and become better people.

3. Use the "Pull" System to Avoid Overproduction – This principle means that customer' demands are synchronized with company replenishment. "Receive items only when you demand and the retailer receives products based on actual customer demand". Try to flow where you can, pull where you must. Stock relatively small amounts of each

product and restock the supermarket shelf frequently, based on what the customer actually takes away. Small laminated kanban cards could be used to say when an operation should be triggered

4. Level Out the Workload – 'Work like the tortoise, not the hare'. Eliminating muda (waste) is only one third of achieving flow; eliminating muri (overburden) and smoothing mura (unevenness) are equally important. The only way to realistically create a continuous flow is to have some stability in the workload. Toyota works to find many clever ways to level the workload, spikes and peaks are handled through flexible workforces brought in from contracting companies and suppliers. Look for a smaller number of part numbers that are big in demand and perhaps even seasonal.

5. Build a Culture of Stopping to Fix Problems, to Get Quality Right the First Time – When there is a problem, do not just keep going with the intention of fixing it later. Stop and fix the problem now. Productivity may suffer now, but in the long run productivity will be enhanced as problems are found and countermeasures put in place. It is necessary to stop the line if companies want to continually improve the process. The closer you are to one-piece-flow, the quicker quality problems will surface to be addressed. Employees feel the responsibility – they feel the power – they know they count. Quality control should be simple and involve team members.

6. Standardized Tasks Are the Foundation for Continuous Improvement – Toyota has found that standards actually can help people control their own work. Standardization is often confused with inflexibility but for Toyota it is a best -practice method. If the worker follows the standard list and a problem occurs, then the standards need to be modified and the design improved upon. Capturing knowledge is

not difficult, the hard part is getting people to use the standards and contribute to improving them.

7 Use Visual Control So No Problems Are Hidden – Clean the work place, make every part or item visual. Use the 5S (sort, straighten, shine, standardize, sustain) to obtain reduced cycle times, increased floor space, improved working conditions, better work team performance etc. People are visual creatures. They need to be able to look at their work, look at the parts rack, look at the supermarket of parts, and easily see whether they are in a standard condition or a deviation from the standard. People looking at well-designed charts on a wall can have very effective discussions.

8. Use only Reliable, Thoroughly Tested Technology That Serves Your People and Processes – Toyota has had experience with pushing the latest and greatest technology, and now avoids repeating this mistake. The adoption of a new technology must support your people, processes, and values. But Toyota is always interested in being current in their technology and encourages their people to "think outside the box" when considering new approaches to work. Personal contact makes a difference and improving the process is the only way you can control inventory.

9. Grow Leaders Who Thoroughly Understand the Work, Live the Philosophy, and Teach It to Others – Toyota are growing their leaders rather than purchasing them because changing the culture each time a new leader comes into office necessarily means jerking the company about superficially, without developing any real depth of loyalty from the employees. It is a basic way of thinking that goes back to the principle. Lean Productions is only effective with the right management and the right philosophy.

10. Develop Exceptional People and Teams Who Follow your Company's Philosophy – People driven continuous improvements means investing in people and in return get committed associates who show up to work every day, on time and are continually improving their operation. Toyota has a strong internal culture that they often refer to as their DNA. Toyota is very conscious of the importance of maintaining this DNA in all their associates and works hard to continually reinforce the culture. But do not implement work teams before you do the hard work of implementing the system and culture to support them. After that it is all about challenging them to do better and respecting employees at the same time.

11. Respect your extended network of partners and suppliers by challenging them and helping them improve – The power of the supply chain is far more than Information Technology; it is the power of ingenuity and relationships. Find solid partners and grow together for your mutual benefit in the long term. Have high expectations of your suppliers, treat them fairly and teach them the definition of respect.

12. Go and See for yourself to thoroughly understand the situation Gemba means go to where it happens. Observe the production floor without preconceptions and with a blank mind. Repeat "why" five times in every matter to get deeper down to the problem. There is a basic belief in Toyota that people solving problems and making decisions need to have a deep understanding that can only come from personally verified data: seeing for oneself. Even high-level managers and executives should go and see for themselves as much as possible.

13. Make Decisions Slowly by Consensus, Thoroughly Considering All Options; Implement Decisions Rapidly – A thoroughly considered technology that has been carefully investigated and proven through trials will be implemented quickly and very effectively. Nothing is

assumed in a project, everything is verified. Thorough consideration in decisions making includes five major elements;

  1. Finding out what is really going on (Gemba).

  2. Understanding underlying causes that explain surface appearance – asking why 5 times.

  3. Broadly considering alternative solutions and developing a detailed rationale for the preferred solution.

  4. Building consensus within the team including Toyota employees and outside partners.

  5. Using very efficient communications vehicles to do one through four, preferably an A4 report.

14. **Become a Learning Organization, Through Relentless Reflections and Continuous Improvement –** A learning organization does not only adopt and develop new business or technical skills; they plan how to learn new skills, knowledge and capabilities. View errors as opportunities for learning rather than blaming individuals. Standardization and learning go hand in hand and are the basis for continuous improvement (Liker, 2004).

Liker & Meier (2007) capture the 14 Toyota business principles in four categories called the 4P model of the Toyota way in figure 2.5.

Within the pyramid (top to bottom):

Problem Solving
(Continuous Improvement & Learning)

People & Partners
(Respect, Challenge & Grow them)

Process
(Eliminate Waste)

Philosophy
(Long Term Thinking)

Annotations (top to bottom):

*Continual Organization learning through Kaizen
*Go see for yourself
*Make decision slowly through consensus; implement rapidly

*Grow leaders who lives the philosophy
*Respect, Develop and Challenge your team. Help your suppliers

*Create process flow; Use pull system
*Level out the workload
*Standardise task
*Use only reliable technology

*Base management decision on a long term philosophy

Figure 2.5   The 4P Model of the Toyota Way

Source: Adapted from Liker (2003:6)

2.7   Tools in Lean Production

The lean production system has been very successful worldwide because it is a self-organizing and dynamic system. It is noted for its flexible, creative and adaptive structure (Liker & Hoseus, 2008: 11-13). The concept of Lean production involves many tools that could be applied in any organization which is trying to become lean. These tools are production and service philosophies that unite every aspect of the production process with an attendant success across the whole value chain. Some of these tools are discussed below.

2.7.1 Waste; Muda, Mura, and Muri.

Taiichi Ohno, a Japanese production manager, observed when he was walking through a factory that there were three different kinds of waste which were referred to as Muda, Mura, and Muri. All these three were discovered to hamper quality, productivity, profitability and the value stream of the factory (Dennis, 2002).

- o **Muda – Non value added**: Wasteful activities that lengthen time, and cause extra movements, excessive inventory or waiting. This waste applies to any activities in organizational processes that absorb resources but add no value and profitability to final products. This includes finished goods and services which do not meet the customer's requirements (Liker & Morgan, 2006: 22; Womack & Jones, 1996: 15).

- o **Mura – Unevenness**: This is a waste resulting from unevenness or variation caused up and down in the demand or production processes. It is imperative to have extra materials, equipment and back-up operators in anticipation of unforeseen demands. Application of mura usually lead to the emergence of Muri.

- o **Muri – Overburdening people or equipment:** These are wastes that result from overburdening people and equipment by pushing them beyond their natural limits and resulting in safety and quality problems.

Muda wastes can be summarized into the prevailing eight types of wastes. They are:

*   Overproduction: Producing more or earlier than necessary. This waste causes other allied wastes such as overstaffing, high inventory costs and transportation costs.

*   Unnecessary Transportation: Moving work-in-progress (WIP) through long distances from one stage to another, an inefficient

transport system, moving materials or finished goods in and out of storage or between processes.

*   **Waiting:** Delays due to the downtime caused by equipment breakdowns and stock outs.

*   **Defects:** Production of defective items and all caution taken against inspections, repair or rework, and scraps.

*   **Inventory:** Unnecessary or excessive raw materials, WIP, or unfinished goods causing longer lead-times, obsolescence,, damaged goods, transportation and storage costs.

*   **Unnecessary motion:** Movement of workers during the course of production processes such as reaching for and looking for products, among others. Walking within the factory during production processes is classed as motion waste.

*   **Over processing and incorrect processing**: Steps or procedures in production processes that are unnecessary or in-effective because of poor tools or product design. Production of higher-quality than necessary is also a waste.

*   **Unused employee creativity**: Losing time, ideas, skills, improvements and learning opportunities through poor or zero engagement of employees (Liker & Meier, 2007; Marskell & Baggaley, 2004).

2.7.2   The place of 5S in Lean

5S is a system of steps and procedures that can be used by organizations, individuals and teams to arrange work areas in the best manners for the optimization, comfort, safety and cleanliness for organizational efficiencies and performance. Anderson (2007, citing Peterson & Smith, 1998) cites the benefits of implementing 5S as: reduced cycle times, increased floor space, improved working conditions, better work team performance, reduced lead times,

improved inventory management, improved morale, reduced search time, improved delivery time, improved access to information and increased level of commitment. These benefits are captured in Table 2.1.

Table 2.1   Overview of the Japanese 5S Principles

Japanese S	English S	Explanation of the 5 S
Seiri	**Sorting**	- Proper arrangement - Determine the frequency of usage for every item in the workplace - Marking the items that are not used - Disposing of the non-essential items - Eliminating sources of cluster and unwanted items
Seition	**Simplify**	- Arranging items in the work area after frequent usage and establishing guidelines - Label every tool, part or item used - Everything should be within easy reach
Seiso	**Shine**	- Cleaning every day and identifying abnormal or potentially problematic situations - Visually sweeping to identify and correct repeated problems, tools, out of place manuals, sequence and inventory in incorrect area.
Seiketsu	**Standardize**	- Make information about location more recognizable if all labels are formatted the same way it is easier to read - If procedures for retrieving and returning items are uniform, it is easier for everyone in the group to locate them quickly
Shitsuke	**Sustain**	- Self-discipline is the routine practice of all the steps that precede it; so 5S becomes a habit. Do not give up

Source: Adapted from Peterson and Smith, 1998

2.8   Lean Benefits and their Bearing on the Continuous Improvement of Organizations

Continuous improvement has long been considered a key business strategy for the success of any organization that needs to be competitive and survive in a world that is continually evolving,

particularly with the increasing focus on meeting cost and quality targets that are set by the dynamic markets and the modern customer (Beulens et al, 2002; Slack et al, 2001: 673-674:).

Lean manufacturing has been shown to greatly improve quality, customer service and profitability. A 2001 study carried out by the Engineering Employers' Federation (EEF), a manufacturers' organization with 352 companies in the US and UK showed that over 70% of companies surveyed had indicated that the most important incentive for pursuing lean manufacturing was to 'increase performance'. Increased performance is tantamount to increased productivity, improved job satisfaction of workers, profitability and reduced costs (Beulens et al, 2002). Zeithaml et al (2006:357-358) believe that ''satisfied employees make for satisfied customers''. The customer's perception of service quality is impacted by the employee's psychological wellbeing and satisfaction. All the five dimensions of service quality can be influenced directly by the service employees. This logic is captured in the model of the organizational profit chain in figure 2.6.
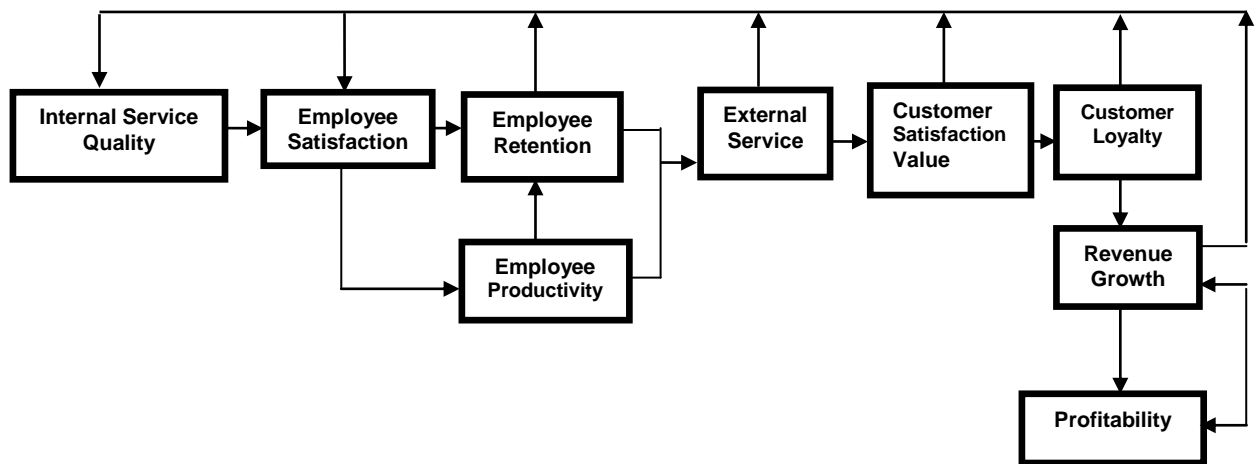
Figure 2.6 The Service Profit Chain

Source: Adapted from Zeithaml et al; 2006

From figure 9, it is clear that job satisfaction has a bearing on job retention and the productivity of employees. Furthermore, employee retention and productivity influence external services, with resultant customer satisfaction and loyalty. The end result of the profit chain is revenue growth and profitability. Sheehan (2002) reports that over 60% of pharmaceutical/medical device companies surveyed in Ireland indicated that cost reduction, increased productivity and competitiveness were their main reasons for pursuing lean.

Production systems need to be arrayed in such a way that continuous improvement becomes an unavoidable element. This thought is conspicuous in Japan's Toyota production systems (TPS). TPS has been found to encourage employees to pursue high rates of productivity improvement. The resulting positive high improvement rates have been spectacular in many Japanese companies. It is common among Japanese companies to speak in terms of a sixty seven (67) per cent learning curve while the western world pulls a rate of 5 to 20 per cent (Olivier, 2007: citing Schonberger & Knod, 1988:197-198). Liker

(2003:96-97) refers to the work of the Toyota Supplier Support Centre thus:

> "in every case, when management changed from a mass-producing supplier to a Toyota Production System (TPS), they achieved a hundred per cent (100%) improvement in labour productivity."

This confirmation indicates that the main reason that most companies become lean, is a quest for quality and a desire to save money. These feats (quality and cost efficiency) can only be achieved by removing excessive production costs and constant improvement in productivity (Schonberger, 2007). Table 2.2 shows the difference between Kaizen (Small incremental changes) and innovation – Kaikaku (reform and big change).

Table 2.2   Difference between Kaizen and Innovation

FACTORS	KAIZEN	INNOVATION
1. Effect	Long-term and long-lasting but dramatic.	Short-term but dramatic.
2. Pace	Small steps	Big steps
3. Time frame	Continuous and incremental	Intermittent and non-incremental
4. Change	Gradual and constant	Abrupt and volatile
5. Involvement	Everybody	Selected few (champions)
6. Approach	Collectivism, group efforts, system approach	Rugged individualism, individual ideas and effort

7. Mode	Maintenance and improvement	Scrap and build
8. Spark	Conventional know-how and state of the art	Technological breakthroughs, new inventions, new theories
9. Practical Requirements	Requires little investment but great effort to maintain it	Requires large investment but little effort to maintain it
10. Effort Orientation	People	Technology
11. Evaluation Criteria	Process and effort for better results	Results and profits
12. Advantage	Work well in slow-growth economy	Better suited to fast-growth economy

Source: Adapted from McGrath, 2007

2.9   Critical Reflections on the Lean Principles

Lean manufacturing and operational principles have been widely accepted as transforming organizational principles for world-class manufacturing. However, there are censures on the implementation and procedural application of lean. Schonberger (2007) writes that in most companies the lean management is only superficial and relies on consultants, with inadequate employee involvement and empowerment benchmarking. Bicheno (2004:4) demonstrated that the lean production principle can be regarded as 'mean' because it encourages a de-humanizing and unequal treatment of employees.

The works of Schonberger (2007) and Jenner (1998) concur with what Mehri (2006) presents in the article "*The Darker Side of Lean: An insider's perspective on the realities of the Toyota Production System*" that the real cost of the lean system can be seen clearly and empirically in its adverse impact on employees (human costs), which extends further than cultural realitivism. Mehri (2006) believes that the Toyota Production principles are a sequence of social and technical organizational procedures that are observable but unhealthy and dangerous for employees. This is because the engineers are 'overloaded' with tasks while the line workers are continuously exposed to work-related hazards due to management striving for a constant production flow and line speed. Mehri's findings show that about 50 per cent of all workers under stress and work-related illnesses were mandated to work and meet production speed despite the poor state of their health. Garrahn and Stewart, (1993: cited by Mehri, 2006) argue that lean does not lead to job development but is rather, a mere technical procedure that ensures workers' disempowerment.

These researchers believe that the Kaizen principle and the suggestion scheme are means of stealing workers ideas for the enrichment of companies while standardized work is 'management-by-stress'. However, Hines et al (2004) conclude that lean systems are more than just a set of mechanistic hard-tools and techniques. To a certain extent, the principles are logical, convenient, responsive, team-based and they add value to the organizational processes. Conversely, a better consideration and attention towards employee's well-being and empowerment needs to be emphasized in order to achieve its full benefits.

2.10 Concluding remarks

This chapter has shown the fundamental principles of the lean production system, its application processes, as well as the unprecedented benefits of its successful implementation. It is important to emphasize, despite skeletal technical hitches in its mode of operation / application in some organizations, that world-class continuous improvement will remain elusive in production and service delivery organizations without the application of lean paradigms.

Liker and Hoseus (2008:15-20) hold the view that the DNA of the lean production system is the culture of employee empowerment. Hence, an in-depth delineation and scrutinization of employee involvement, participation and empowerment in the suggestion scheme is presented in the next chapter.

Chapter 3 : DRIVERS OF EMPLOYEE PARTICIPATION AND EMPOWERMENT

3.1 Introduction

The employee empowerment theory and study does not hinge on a particular, unifying construct that is sufficient for integrating the multifaceted activities and relationships that typify its processes (Robbins *et al*; 2002:420). The dynamics of the empowerment process are reflected as the interface between the individual employee and the localized work environment within the spectrum of the organization context. This chapter of the research work presents an in-depth explanation of the concept of employee empowerment and the delineation of empowered behaviours with respect to the links between organization context, the local work environment, employee's intervening perceptions and attitudes in psychological empowerment. The roles of individual employee differences as well as the implications for organizational leaders and managers are also portrayed.

3.2 The theory of employee empowerment and participation

The term empowerment has been defined by a variety of scholars from various perspectives. Robbins et al (2002) summarizes the descriptive delineations of empowerment as intrinsic task motivation, commitment-based designs, perceptions, the transfer of power or authority, job support structures that reflect the sharing of resources and information, management or leadership actions, human resource practices such as training programmes or reward systems, and behavioural or performance-related outcomes. Empowerment has been defined comparatively to leadership and autonomy of the employee regarding service encounters (participation), and also to the approach of the production line method which is the traditional method of delegating authority to subordinates (David, 2005:19).

Schultz et al (2003:147) define empowerment as a means of providing employees with enough autonomy to allow them handle unforeseen problems in production processes and industrial services. It means the spreading of administrative and decision making responsibility to employees regarding all aspects of product development or customer services.

Schultz *et al* (2003:147) view the definitions of empowerment as enshrined in the following elements:

- o Authority that is delegated from those who have positional power to the lowest possible level within the organization or society;
- o To increase accountability among the lower cadres;
- o To develop problem-solving capabilities in the people at these levels;
- o To assist people in taking charge of their own destinies and projections;
- o To help them achieve their full potential;
- o To have the positive impacts of empowerment spill over into the entire lives of these people.

Chaturvedi (2008) states that empowerment is one of the most successful ways of enabling employees at all echelons to use their creative abilities to improve the performance of the organization they work for, develop the quality of their own working life, break out of the stagnant mind-set of fear-related risk taking and develop the ability to try something new.

There is need for an organizational culture of participation in companies aspiring to be positively positioned in the global economy. The adoption and practice of this culture will create a productive environment of an all-inclusive participation and suggestion for all cadres of workers as well as higher retention rates in the workforce. Employees do feel more

valuable when they participate in the organization, especially when they see the results stemming from their actions (Leibowitz, 2003: citing Calder & Douglas, 1999).

Schultz *et al* (2003:147) iterate the High-Performing Contractor assessment of 2004 thus:

> "..the United States average one new idea a year per every five
> employees. Japan, who uses empowerment principles, averages
> five new ideas a year per every employee…Wainwright Industries,
> a Malcolm Baldrige National Quality award winner, averages 60
> ideas per employee per year.….What has this done for them?
> Employees benefited directly from their own good ideas in the
> form of profit sharing and improved workplace safety.
> Over a three-year period, the number of recordable accidents
> decreased by 72% and annual workers' compensation costs fell
> by 86%. Wainwright industries had a high rate of attendance
> (greater than 99% for the salaried workforce) and turnover rates
> that are lower than other industries and local averages.
> From an operations' standpoint, these ideas have helped
> Wainwright to cut its lead time for making one principal product
> to 15 minutes, as compared to with the previous 8.7 days and to
> reduce defect rates tenfold. The customers' benefits translated
> into an on-time delivery rate of nearly 100%, as compared with
> the previous 75% and a 35% reduction in product cost."

3.3   Underlying constructs of employee empowerment

Employee empowerment cannot be achieved without building and developing human capacity. Team members must not only have the confidence and competence to undertake assignments but also to

have the opportunities to expand and excel. Confidence and competence increase when people gain more experience in organization and management and acquire new knowledge and skills, including the capacity to generate knowledge (Chaturvedi, 2008; David, 2005). Empowerment is combination of interorganizational constructs comprising commitment, organizational citizenship behaviour and motivation as reflected in figure 3.1.

Figure 3.1   Underlying Constructs of Employee Empowerment/Engagement

Source: Robinson and Hayday (2003:2)

During the recent years, contemporary management scholars and practitioners have associated the workplace phenomenon, empowerment, with actual employee involvement, participation,

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development and suggestion for continuous improvement. Employee empowerment is documented by many institutions today as a key predictor of desirable organizational outcomes such as innovation, improved productivity, profitability and customer satisfaction among others. However, the 'soft' human-oriented factors of employee attitudes, traits, perceptions and emotion, which are strong forecasters of employee behaviour and performance, need to be given an appreciable consideration before a full realization of the outcomes of employee involvement and participation could be fully harvested (Luthans & Peterson: 2001:376; Lawler et al; 2001).

Several organizational researchers have focused their work on empowering management practices, including the delegation of decision making from higher organizational echelons to lower ones and increasing access to information and resources for individuals at the lower levels. However, Thomas and Velthouse (1990) advocated the need for alternative perspectives on empowerment that distinguish between situational attributes (management practices) and job incumbent cognitions about those attributes (psychological empowerment).

Psychological elements of empowerment have prompted various researchers all over the world to develop a quest for answers in line with the predominant influences of employees' attitudinal factors on performance. Past studies that were focused on employee's satisfaction as a predictor of organizational productivity have been refuted by the meta-analysis conducted by Iaffaldano and Muchinsky (1985: cited by Bloisi *et al*, 2003:60). However, recent research has established a constructive relationship between employee cognitive attitudes and performance (Petty *et al*; 1984: 712), emotions and acceptable job outcomes (Staw et al; 1994:51) and personality traits and job

performance (Barrick & Mount, 1991:6). These cognitive attitudes, traits and emotions are antecedents to psychological empowerment.

Employee empowerment focuses more on how psychological experiences at work and work frameworks of employees influence them in participation and suggestion schemes for optimum performance. Poisat (2006:164) views the psychological aspect of empowerment within the three dimensional frameworks of emotional, cognitive and physical constructs.

Robbins et al (2002) say that psychological empowerment manifests in four cognitions relating to work and work contexts. These dimensions are meaning, competence, Self-determination and impact. They are delineated thus:

1. **Meaning:** Meaning is the value of work goal or purpose that is judged in relation to an individual's own ideals or standards (Thomas & Velthouse, 1990). Meaning involves a fit between the requirements of work responsibility and beliefs, values and behaviours.

2. **Competence:** Competence, or self-efficacy, is an individual's belief in personal capability to perform activities with skill. Competence is synonymous to the individual's belief, personal mastery, or effort-performance expectancy. This dimension deals with workforce efficacy.

3. **Self-determination:** While competence is a mastery of behaviour, self-determination is an individual's sense of choice or autonomy in the initiation and regulation of actions or work behaviours and processes.

4. **Impact:** Impact refers to an individual's perceived degree of influence over outcomes in one's workplace. It is the degree to

which a person can influence strategic, administrative or operating outcomes of work.

Employees' attitude and perceptions of the work environment are a necessary intervening variable in the empowerment process (Robbins *et al*, 2002). These components can be viewed as the essential prerequisites for the motivation to engage in empowered behaviour in the work environment. Employees are incited to have a sense of feeling and conviction that their activities and contributions in the workplace are worthwhile (meaning). In addition, they must feel that they are able and competent to engage in what they do (competence), perceive the opportunity to make choices without fear (self-determination) and believe that their behaviour and actions will have some influence on their environment (impact).

3.3.1 Organizational Citizenship Behaviour

Empowerment is not a single, easily defined construct. It is an on-going process that revolves in a dynamic environment involving many elements that operate at different levels of analysis. The dynamics of the empowerment process are reflected in the interaction between the localized work environment and the individual employee within the wider organization context. The empowerment process, in its full framework, incorporates links between the organizational context, the local work environment, intervening perceptions and attitudes, and specific components of psychological empowerment. The suggested need for the integration of all the relevant levels of analysis is embedded in the roles of contextual, environmental, cognitive and behavioural variables of the empowerment process (Robbins et al; 2002: citing Spreitzer, 1996).

The participatory and citizenship concepts bring the employees to the position of owners of work as workers share with front-line employees the information about the organization's performance, information about rewards based on performance, knowledge that is contributory to organizational performance, and decisions that influence the organization's direction and performance. These principles make employees accountable for products and services and share in the rewards of success and failures of the organization. If workers are dependent on each other to get the work done, encouraging autonomous individual participation would be counterproductive. Also, if employees do not trust their managers, it is unlikely that participation from pairing workers and managers would succeed. (Swanepoel *et al*, 2008).

Liker and Hoseus (2008:53) believe that there exists a mutual bond of citizenship between an empowered employee and a pragmatic organization. This is illustrated in the model of partnership as follows:

> ''…. the Toyota goal is that its employees contribute their best
> effort to the achievement of the purpose and prosperity of the
> company and then take their fair share in compensation. In the
> process, employees achieve growth and satisfaction by
> participating actively in continuous improvement. Mutual
> trust is the bond that turns individual goals of the company
> and the employees into a partnership.''

This partnership model, depicting organizational context and citizenship behaviour, is illustrated in the figure 3.2.
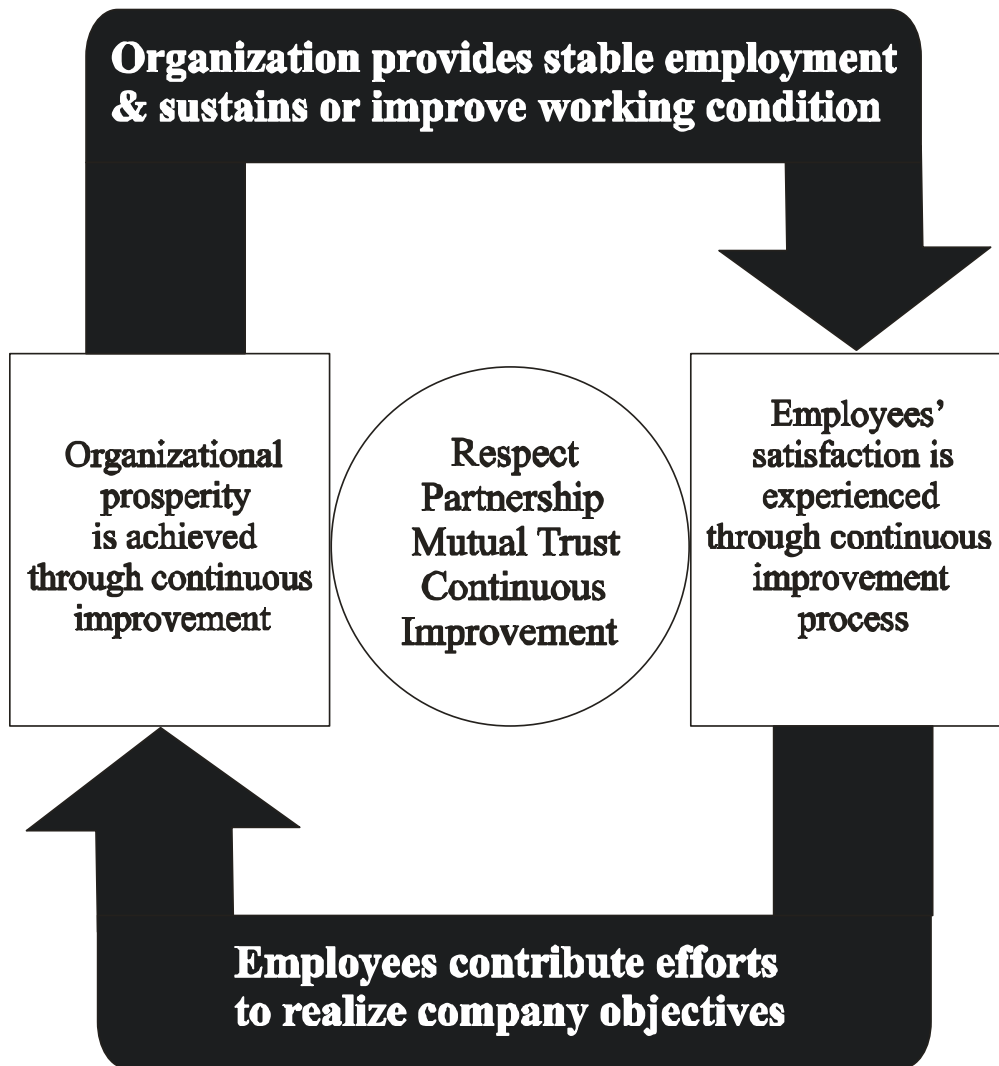
Figure 3.2   A partnership model between an Organization and its employees

Source: Liker & Hoseus (2008: 53).

The organizational citizenship behaviour, depicted in figure 3.2, is an act of employee going further than the call of function. This concept propels employees to regularly exceed and deliver beyond the confines of their job descriptions. In this model, there is a positive correlation between organizational citizenship behaviour and job satisfaction.

Robbins et al (2002) depict the most important fundamentals of the empowerment process model, in figure 3.3, as they act and interact to influence employee behaviours on the job. It is proposed that the most critical step in the empowerment process is the creation of local work environment within a broader organizational context that will provide both an opportunity to exercise individual's range of authority and power (empowered behaviours) as well as the intrinsic motivation within employees to engage in the type of behaviour (psychological empowerment).
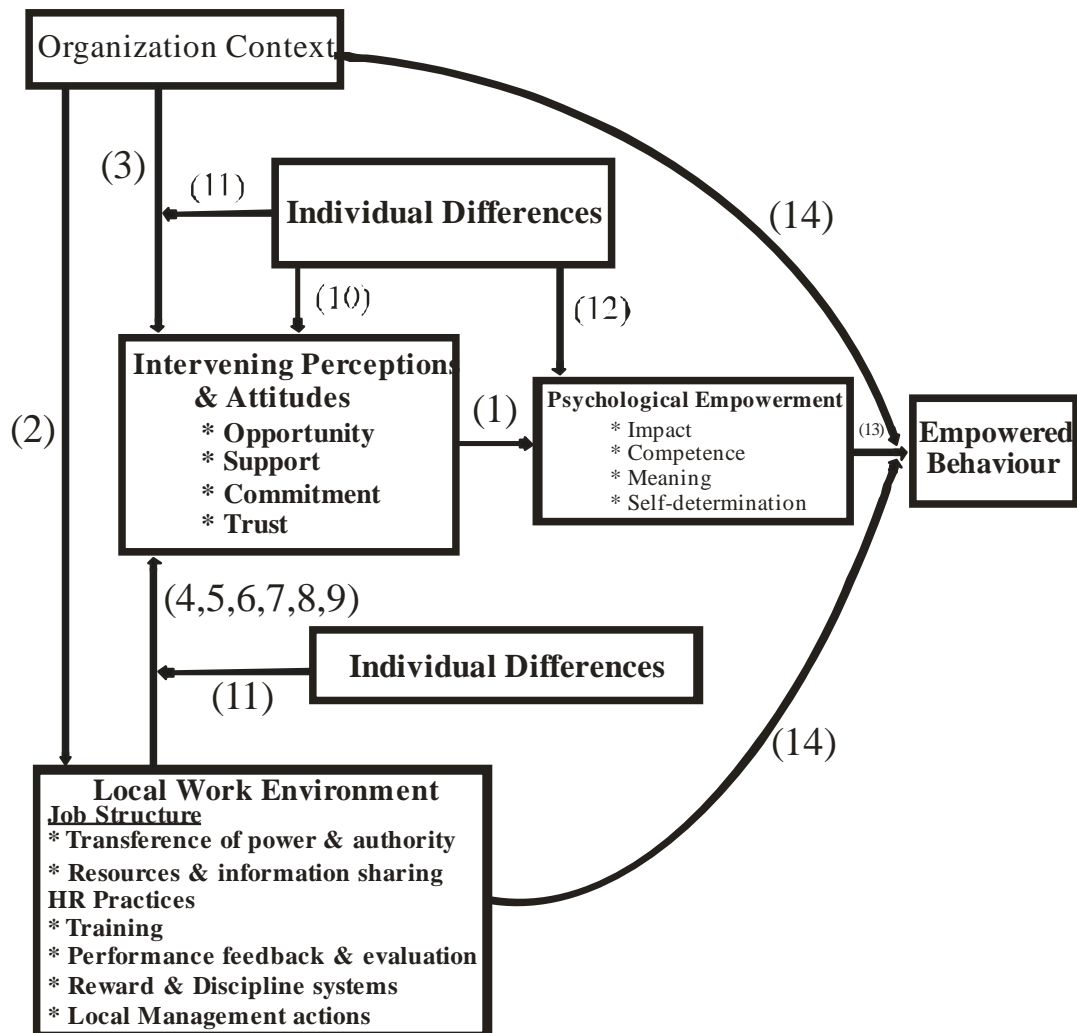
Figure 3.3   An Integrative Model of Empowerment Process

Source: Adapted from Robbins et al; 2002.

The integrative model in figure 3.3, incorporating various levels of analysis, is used to scrutinize various constructs of organizational citizenship behaviours, commitment and motivation perceptions of this research. Relationship number 2 in the figure reflects the link between the organizational context and elements in the local work environment (job structure, human resource practices, and local management actions). Prior research suggests that perceptions of the contextual elements tend to be fairly consistent across employees within a single organization. Contextual variables of the organization reflect the cultural and historical influences that have been suggested in past research to be important influences on the local work environment (Robbins *et al;* 2002; Staw, 2004:103).

The analysis of figure 3.3 shows the following:

- o Psychological empowerment is a function of environmentally influenced intervening perceptions and attitudes;
- o Environmentally influenced perceptions of opportunity are positively linked to the impact of psychological empowerment;
- o Individual differences influence the perceptions and attitudes that intervene in the relationship between the environment and psychological empowerment;
- o The organizational context as well as the local work environment will influence the intervening perceptions and attitudes which are proposed as antecedent to psychological empowerment;
- o Training and transfer of power and authority within the local work environment will positively influence perceptions of opportunity and organization commitment;
- o Performance feedback and evaluation as well as resource and information sharing will influence organizational trust and perceptions of support;

o Reward and discipline systems will influence organizational commitment and organizational trust; and

o Local management actions will influence perceptions of support, trust and employee commitment.

The organizational framework plays notable roles in influencing the intervening perceptions and attitudes of employees as identified in figure 3.3. These intervening variables reflect perceptual and attitudinal reactions both to structured jobs and daily interactions within the organizational context and in the local work environment. Thus positive responses to involvement interventions have been shown to be affected by organizational democracy, contributions and suggestions (Poisat 2006:186).

A broader scope of empowerment and involvement at all levels will reflect a culture that values people and therefore should have a positive influence on organizational citizenship behaviour and local management practices. Ladd and Marshall (2004, citing Marchington *et al*, 1994) believe that a greater range of involvement and participation schedules throughout the organization have been shown to influence responses to local management actions positively.

Staw (2004:102) categorizes organizational citizenship behaviour as follows:

o Organizational citizenship behaviour represents all those behaviours that fall outside the job description and offer assistance to co-workers. Assisting others in completing tasks, training a new employee and fetching materials that a colleague needs;

- All those actions where an employee acts proactively in order to forewarn or advise where possible problems may occur. Providing advance notice of work schedules and reminders of deadlines;
- Doing more than is expected. Showing extra enthusiasm or effort in the completion of one's own or others' tasks;
- Tolerance for inevitable inconveniences that may be part of a job without showing discontent or feeling aggrieved about it;
- Relates to the political processes in the organization and includes actions such as; attending meetings, responding to mail, expressing opinions and keeping up to date on broader issues concerning the organization
- Involves actions that prevent/resolve possible inter-personal conflict and conflict escalation;
- Cheerleading incorporates all those gestures of encouragement, support and positive reinforcement of co-workers' achievement. These behaviours promote a positive climate in the workplace and also encourage further acts of organizational behaviour (Berg & Theron, 2003:343).

3.3.2 Organizational Commitment

Employee perceptions and attitudes (commitment and trust) are shown in relationship number 3, in figure 12, to be influenced by both organization contexts and local work environment. This is shown in relationship 4-9 as depicted in the empowerment mod el of figure 3.3. The intervening perceptions and attitudes are key links in the process by which organization contexts and the local work environment influence psychological empowerment (Robbins, *et al*: 2002).

Organizational commitment is viewed by Robinson and Hayday (2003: 2) as the second major construct of employee empowerment. Commitment is described as a psychological state in which a person feels connected or coupled to someone, something or a principle (Guirdham; 2002:341). In a concise way, organizational commitment can be described as the extent to which an individual identifies with an organization and is committed to its goals and values. The more an employee identifies with their organization and internalizes its values, the more likely it is that he or she will perceive more meaning in tasks (Robinson & Hayday; 2003:5). Other psychological dimensions associated with commitment are attitude, emotion, values and belief.

Robbins (2002, citing Allen & Meyer, 1990) suggests that affective commitment reflects identification with management or the organization based on a desire for affiliation or internalization which is predicated on the similarity between the individual's and the organization's values. Organizational commitment is therefore positively linked to the cognition-meaning of psychological empowerment.

Gratton (2000) concurs with Johnson (2000:83) that an effective strategy to gain employee commitment begins with clear values that employees support. Shared values are believed to be the fundamental driver of employee commitment and from where all other employee actions are derived. A number of variables that enhance a positive employee commitment are summarized by Moorhead and Griffin (2001:98) as follows:
   o   Treat employees fairly;
   o   Put in place a valuable job security;
   o   Provide reasonable rewards;
   o   Allow employees a say in how things are done;
   o   Design jobs that are stimulating;

- o Provide extrinsic rewards;
- o Clarify the roles employees are expected to play;
- o Initiate participative management.

World-class manufacturing has a more flexible and adaptive team-based structure. A well-structured team will aid the effective production of goods and services through the integration of activities involved in the process of production. Team work is a key feature of involvement. It aids the commitment of the workforce to the organizational goals and objectives (Sano, 2002:941).

3.3.2.1   Team commitment versus Leadership

Team commitment has become one of the important levels of organizational commitment. Team commitment is used "to describe very different constructs, experiences, degrees of involvement and motivation" (Hopfl, 2001, p. 90).

Team empowerment is viewed as intrinsic motivation. It is manifested in four cognitions reflecting an individual's orientation to his or her work role in the form of meaning, competence, self-determination, and impact (Poisat, 2006:187; Thomas and Velthouse; 1990). Team commitment is "the relative strength of an individual's identification with, and involvement in, a particular team". Effective teamwork can be based on an individual commitment to the team, workplace, division, and/or corporation (Robbins *et al*; 2001:205; Sano, 2002:941). The principle of team trust hinges on the belief that an individual or group:

(a) makes good-faith efforts to behave in accordance with any commitments both explicit and implicit,

(b) is honest in whatever negotiations preceded such commitment, and (c) does not take excessive advantage of another even when the opportunity is available (Sano, 2002:941).

Spreitzer, *et al* (1997) opine that a high level of team trust between managers and employees leads to better communication and job satisfaction for both groups. People working in teams have higher levels of job satisfaction than a workforce working in traditional settings within the same company.

Job satisfaction consists of intrinsic and extrinsic satisfaction. The aspects concerning challenge, achievement, and ability utilization are part of intrinsic satisfaction and it directly relates to job experience in work environment. Extrinsic satisfaction is related to compensation (Liden *et al*; 2000).

The leadership process therefore brings about an interaction between people and the job context, with attendant outcomes of trust, customer satisfaction and high quality products. It is necessary in an adaptive organization to engage employees through personal appeal, inspiration and motivational factors in order to move the organization towards a better position and the competitive edge. Leadership development depends on nurturing social relations among the individuals in a group, team, or organization (Doyle & Smith, 2006).

Spreitzer *et al* (1997) believe that the influence process of leadership in an organization involves a great deal of downward influence (top-down direction) between a leader and followers. After reviewing 13 different perspectives of leadership, it was concluded that the roles of leadership can be seen as "the focus of group processes, a personality attribute, the art of inducing compliance, the exercise of influence, a particular

kind of act, a form of persuasion, a power relation, an instrument in the attainment of goals, an effect of interaction, a differentiated role, and as the initiation of structure".

The quality of leadership in any organization is essential for its success and its survival. Doyle and Smith (2006) suggest four common ideas or concepts that occur when one researches leadership. These are:

- o Leadership involves people who influence other people;
- o If leaders exist, then there are followers who follow;
- o Leaders usually arise when problems or crises arise;
- o Leaders certainly have a clear picture of what they desire and how they are going to achieve this.

Leaders are gifted with the capacity to think and move creatively in situations that are not normal or routine. They can be compared with management and are able to influence the ideas, feelings and actions of other people (Doyle & Smith, 2006) in the planning, organizing, problem-solving and control activities that are related to the everyday running of organizational processes (Schultz *et al,* 2003:186).

3.3.3 The Motivation paradigm in psychological empowerment

Empowered employees have more positive attitudes in terms of work/job satisfaction (Spreitzer *et al*; 1997) and organizational commitment that is laced with more pay, promotion and less propensity to turn over(Liden *et al*; 2000).

The psychological or motivational implications of empowerment are manifested in theories of human motivation as well as motivational approaches to job design (Robbinson & Hayday: 2003:2). The

knowledge of various theoretical perspectives concerning the motivation of employees in the context of the work environment are discussed in the following theories in conjunction with the other two constructs of organizational citizenship and commitment that were discussed earlier. In this section of the thesis some of the important theories of motivation and approaches that support the principles of employee empowerment and participation are elucidated.

3.3.3.1   Maslow's Hierarchy of Needs.

Maslow's hierarchy of needs establishes the theory of human motivation which offers a different model from scientific management. The theory identifies five levels of human needs which are postulated to be met in an ascending order through the physiological, security, social, esteem and self-actualization levels of needs. The four lower levels are grouped together as deficiency needs associated with physiological needs while the top level is called the growth needs (Voisard, 2008). These hierarchies of needs are usually represented as a pyramid, as shown in figure 3.4.
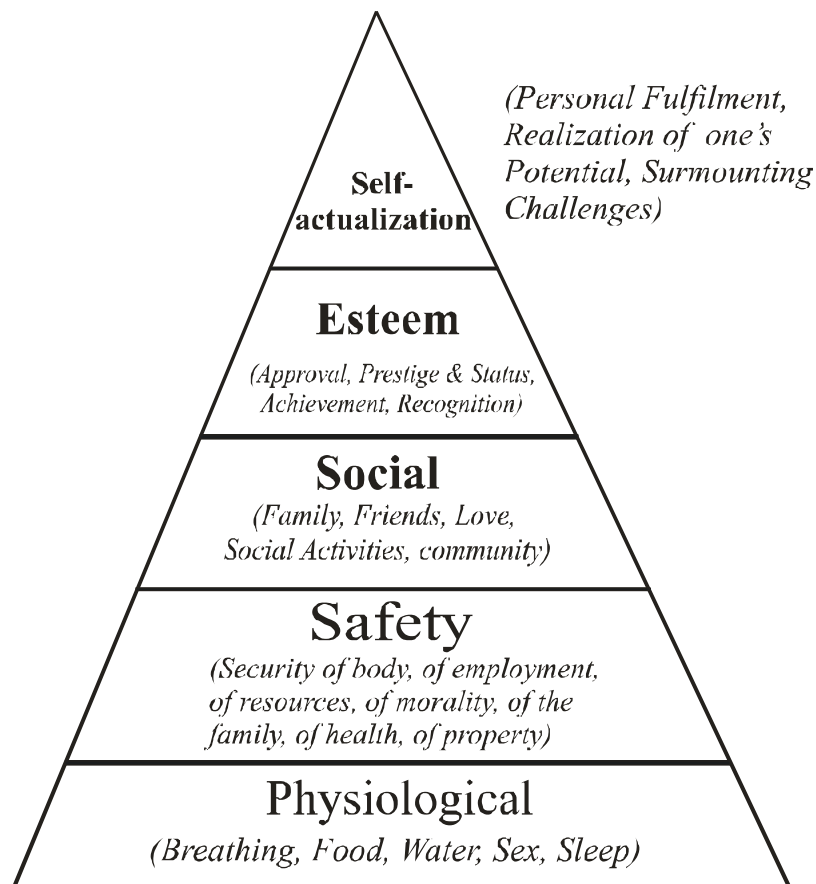
Figure 3.4   Maslow's Hierarchy of Needs

Source: Swanepoel et al; 2008:325

Voisard (2008) indicates that Maslow posited that the deficiency needs must be met before the growth needs can be met. This notion is basically a concept of 'prepotency' which is rooted in the fact that needs in the upper hierarchy of the schemata only come into focus once all the needs that are at the lower part of the pyramid are satisfied.

The greatest practical asset of Maslow's theory is that it draws awareness to the fact people have different needs and are driven by different motivational elements. However, the concept has been **much** evaluated and criticised and though it enjoys wide support, it has more

of an intuitive appeal than empirical validation (Swanepoel *et al*; 2008:325). Furthermore, the contentious reversal of the social and esteem elements in the hierarchy is most frequently debated. To some people, the esteem elements assume a greater importance than the social elements and what is an effective motivator for one person may be totally ineffectual for another. The people from many famine-stricken and disaster prone areas, such as Haiti, may consider the attainment of a modest element of safety and social levels a happy achievement, while the idealists and suicide bombers, with high levels of motivation, may show little concern for lower level needs such as food, shelter and safety provided they can achieve the objectives to which they are dedicated (Swanepoel *et al*; 2008:325-326; Voisard, 2008).

3.3.3.2 Alderfer's ERG Theory

Maslow's hierarchy of needs was adapted on the basis of empirical research. Alderfer's theory was based on three core needs of 'existence', 'relatedness' and 'growth', hence the name **ERG**.

Existence Needs: These are needs that are related to basic material existence. These are condensed needs from Maslow's physiological and safety needs.

Relatedness Needs: These needs relate to an individual's desire for interpersonal relationships and interaction. These are also related to the social and the external aspect of Maslow's esteem needs.

Growth Needs: These are also condensed needs that are related to an individual's inherent desire for personal development. These are modified from the combination of the internal aspects of Maslow's esteem and self-actualization needs.

Swanepoel et al (2008:327) opine that the ERG theory differs from Maslow's hierarchical needs in the following ways:

* The ERG theory postulates that two or even all three needs categories can influence an individual's behaviour simultaneously since it is not a rigid hierarchy of needs where a higher order of needs can only become operative once the lower needs have been satisfied;

* ERG theory suggests that an individual can regress to a lower level of needs if one level of needs remains unsatisfied. This is a deviation from Maslow's belief that a person will remain fixed on a particular need level until that need is satisfied.

Alderfer's ERG theory has therefore shown that needs do not present themselves for fulfilment in a neat, linear and chronological order from the lower to higher levels as portrayed in the Maslow's need hierarchy (Lorenz, 2008; Eggert; 2001:13-20).

3.3.3.3 Hertzberg's Two-Factor Theory

The traditional views of job satisfaction assumed a direct linear relationship between job satisfaction and dissatisfaction. The view assumes that if the factors responsible for dissatisfaction were to be addressed, the individual would progress along the satisfaction scale. Hertzberg's two factor theory differs from the traditional view as it suggests that the opposite of satisfaction is not dissatisfaction (Swanepoel et al, 2008:328).

Frederick Hertzberg's two factor theory originated from the question he asked engineers and accountants: 'What do people want from their jobs?' From this research he concluded that all variables that make people feel either good or bad about their jobs can be grouped into one of two factors. The more intrinsic factors (motivators) such as achievement, recognition, the work itself, responsibility, growth and advancement, are related to job satisfaction, while the extrinsic

structures (hygiene factors) such as pay and security, company policies, working conditions, supervision, and interpersonal relationships are viewed to work out as dissatisfaction. Conversely, the absence of these extrinsic factors does not result in dissatisfaction but rather leads to a feeling and experience of no satisfaction. Removing the dissatisfying aspects (the hygiene factors) from a job does not necessarily make it satisfying. According to Hertzberg, job satisfaction is a function of variables called 'motivators' which are related to challenging and stimulating activities or work content (Lorenz, 2008: citing Kreitner & Kinicki, 2002:186).

It was concluded in Swanepoel et al (2008:328) that Hertzberg's dual structure theory has received scant empirical support with wide neglect from other researchers thereby leading to the conclusion that the original research results are flawed and of no basis. A schematic diagram of this theory is shown in figure 3.5.

Satisfaction

Low ◄——————————————————————► High

Motivators

Hygiene Factors

High ——————————————————————► Low

Dissatisfaction
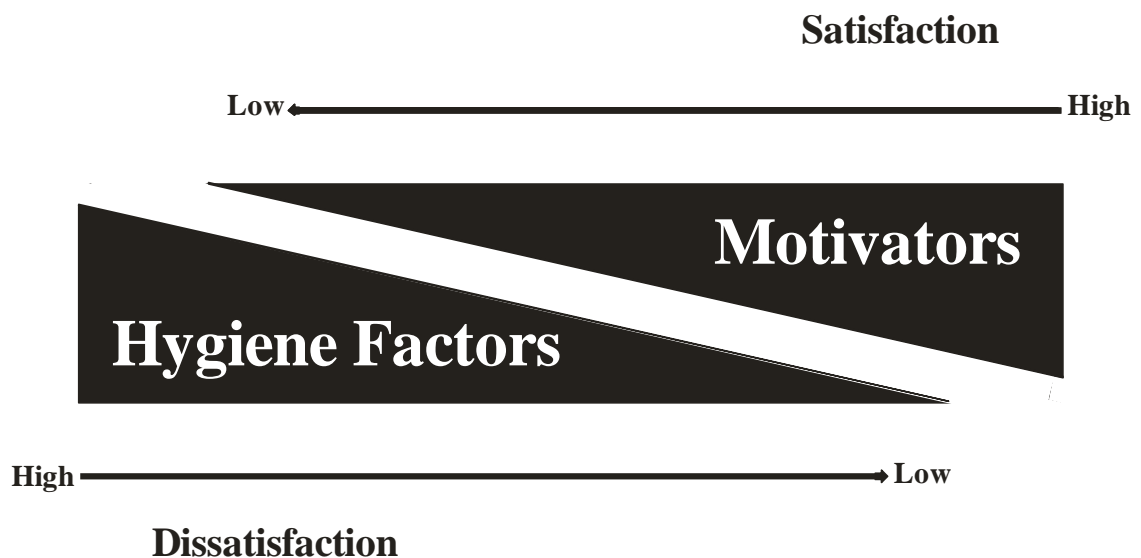
Figure 3.5   Hertzberg's Two Factor Theory

Source: Adapted from Lorenz, 2008.

3.3.3.4 McClelland's Need for Achievement Theory

Moorhead and Griffin (2002; citing McClelland's 1961 theory) opine that there exists an inherent individual's need for achievement, affiliation and power. The need for achievement refers to an individual's desire to accomplish a task or goal more effectively than in the past. Affiliation needs entail the need for human companionship and social relationships, while the need for power includes the desire to control resources, influence, coach and manipulate others. An employee's specific needs and values significantly influence the individual's intervening perceptions and attitude because research suggests that the need for achievement is positively related to commitment (Voisard, 2008). The need for achievement, of the three needs, is most relevant to this research and further elucidates the underlying motives that steer employee empowerment and involvement in the suggestion scheme.

The summary of the individual characteristics that are associated with each of the needs discussed by Moorhead and Griffin (2002:128) are mentioned below.

3.3.3.4.1 The need for achievement

➢ Individuals with a high need for achievement set moderately difficult goals and make moderately risky decisions. Conversely, individuals with a low need for achievement are inclined to set easily achievable goals with minimum risk.

➢ Receiving immediate and specific feedback on performance is highly important to high-need achievers. For this reason high-need achievers are more likely to take jobs where feedback is immediate, such as sales positions.

➢ High-need achievers are preoccupied with their work and continuously think about it even when they are away from work. They also become frustrated with incomplete projects.

➢ High-need achievers take personal responsibility for the job and often take on more than is required. This in turn leads to a sense of accomplishment. From this characteristic it may be deduced that the job itself becomes a source of motivation.

➢ High-need achievers often do not make it to senior managerial positions as their traits conflict with the requirements of high-level positions. At higher-levels workers are expected to delegate more and are forced to make either more or less risky decision than they are prepared for. They may also not receive immediate feedback.

The characteristics of high-need achievers closely resemble those associated with empowered employees.

3.3.3.4.2 The need for affiliation

➢ People with a high need for affiliation want reassurance and approval from others and are genuinely concerned about other's feelings.

➢ They are more likely to conform their thinking and actions to comply with those of individuals with whom they have a close relationship or identity.

➢ Professions with high levels of interpersonal contact and helping others will appeal to people with a high need for affiliation.

Robbins *et al* (2003:134) suggest that people who fall within this class have a preference for spending time in fostering relationships and

therefore will find it hard to make unpopular decisions. As a result individuals in this category are not likely to be the most effective managers or high stratum employees as they would be **apprehensive about making suggestions and decisions that other may dislike.**

3.3.3.4.3   The need for power

The need for power is explained by Robbins et al (2003:134) as the need to make others behave in a way that they would not have behaved otherwise. This need can be used positively or negatively. Individuals with a high need for power can be effective managers if they channel their need for power in the following ways:

➢   Power should be sought for the betterment of the organization and not for self-interest;

➢   They should have a low need for affiliation, as some decisions may be unpopular with employees;

➢   They require a large degree of self-control when the need for power may interfere with effective organizational and personal relationships.

Kreitner and Kinicki (2002: cited in Robbins *et al*, 2003:135) report that if individuals channel this need positively they will assist others in task completion and goal achievement.

It is clear from the above analysis of the afore-mentioned characteristics that individuals with a strong achievement need represent the most significant correlation with the empowered employee.

3.3.3.5 Douglas McGregor's Theory X and Theory Y

McGregor's theory focuses on the importance of underlying assumptions about people in dealing with other employees, peers, and subordinates. In broader terms, it is a typical theory of leadership and fundamental influences of motivational strategies on people and employees in the workplace (Voisard, 2008). McGregor in his seminar on "The Human Side of Enterprise" proposed that:

> "Managers hold one of two diametrically opposed views
>
> of the nature of man and that these implicit philosophies
>
> are determinative of managerial style….Behind every
>
> managerial decision or action are assumptions about
>
> human nature and human behaviour" (Swanepoel *et al*, 2008:335).

McGregor's theories are related to the Maslow's theory of motivation and designated as theory X and theory Y. Handel (2003:81) opines that McGregor's theory X assumes that lower-order needs dominate individuals while theory Y assumes that higher-order needs are prevalently dominant in persons and the adoption of theory Y therefore suggests ideas of participative management where organizations could tap into invaluable resources of employees through the application of Maslow's theory of motivation.

McGregor argued that the scientific management system of labour control needs to be replaced by a philosophy that recognizes that workers seek stimulating work. This thought is represented in the theory Y which supports workers inventiveness, self-esteem and the employee's collective share in the responsibility for organizational success or failure. All jobs, especially those at the bottom of the

organizational hierarchy, need to be structured as diverse and meaningful tasks that are entrusted in the hands of lower echelon workers with greater responsibility in contrast to scientific management. Decentralization of decision making and suggestion schemes are encouraged within McGregor's theory Y. An authentic shift in the decision making power and suggestion format from management to employees necessitates less reliance on the external control of workers, increased organizational citizenship, commitment and empowerment. Employee's self-actualization demands require that individuals seek a job inherently worthwhile in addition to workers simply seeking extrinsic rewards such as compensation (Handel, 2003:108-113; Swanepoel *et al;* 2008:336).

In summary, the motivational factors and empowerment variables proposed by Handel (2003:110-113 citing McGregor, 1957) correspond closely with the profile of empowered employees. The combination of these factors together with the expectancy theory is particularly relevant to this research. The expectancy theory is discussed and is delineated in the next section of this study.

3.3.3.6   Work performance model

The job performance model in figure 3.6, proposed by Mitchell (1997: cited in Poisat, 2006:167) is a conceptual representation that explains the performance outcome of the relationship between motivation and individual's behavioural variables.
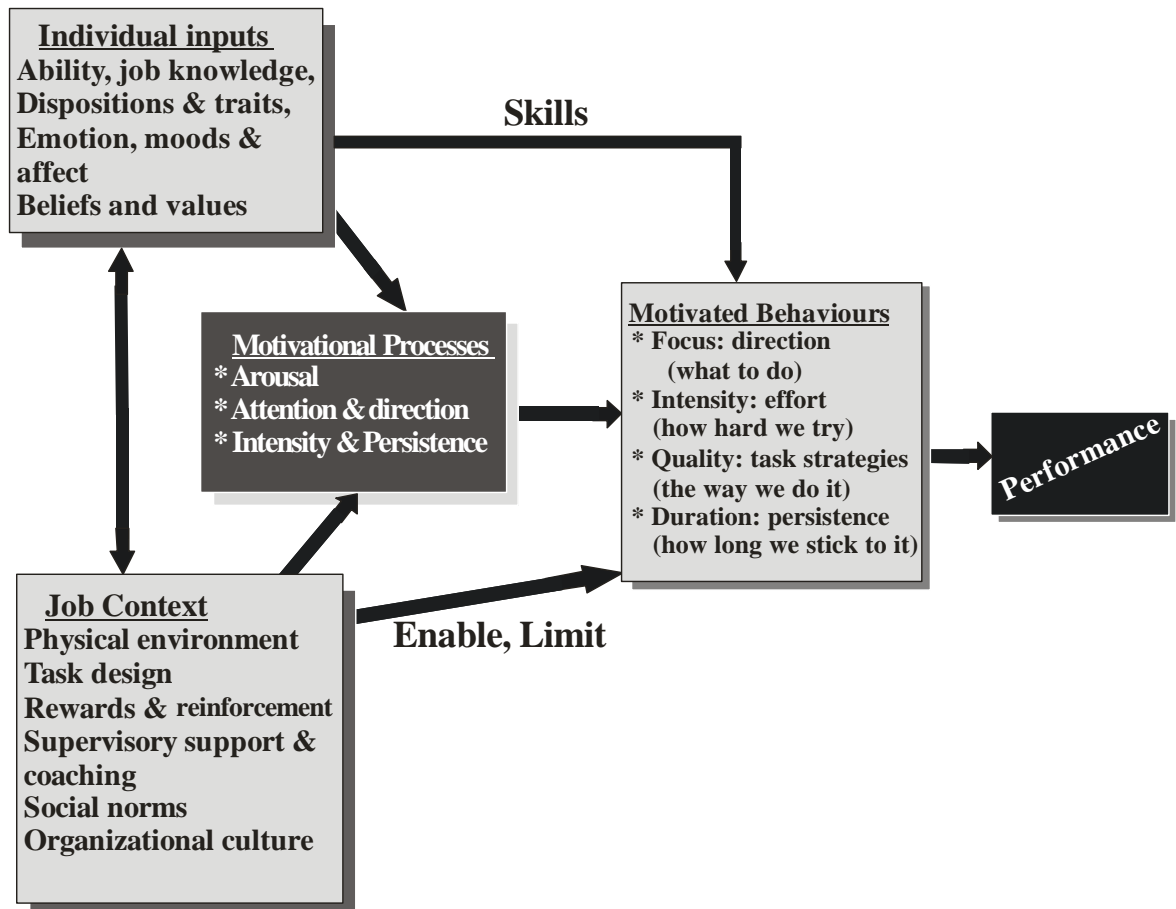
Figure 3.6   Job performance model of motivation

Source: Adapted from Mitchell (1997: cited in Poisat, 2006)

This model provides an explanation of the causative factors of high levels of motivation and the influence these factors have on motivated behaviours. Mitchell's model provides a useful insight into individual and job context factors. The individual factors such as disposition and traits, emotions, moods, and beliefs coupled with job context factors of work environment, task design, rewards and reinforcement, supervisory support, coaching and organizational culture correlate with the outline of the empowered employee features discussed in sections 3.3 and 3.3.1.

Mitchell's model shows that employees' ability, skill levels, emotional state and the job context factors are determinants of employee motivated behaviours. The motivated behaviours of focus, intensity, effort, quality, duration and persistence commensurate with the contributory roles of employees with appreciable organizational citizenship behaviour as discussed in 3.3.1. These motivated behaviours lead to superior performances that are needed for growth and in world-class organizations. The onus lies on employers to match employees' abilities with the requirements of the job while providing an adequate production environment.

The following features can be noted in the observation of the relationship between performance and motivation dynamics of the job performance model:

* Motivation is usually measured against observable behaviours such as effort, strategies used and persistence. These behaviours are manifestations of motivation, which in turn relies on an individual's desires and intention. In summary, motivation represents a series of psychological processes that encourage action in individuals. The strength of motivation is observed in motivated behaviours;

* The individual and job contexts are two of the factors that influence motivated behaviour;

* Behaviour is different from performance. Performance is a combination of a numbers of behaviours that meet certain quality standards over a period of time; and

* Motivation, though very important, may not be a sufficient contributor to job performance in certain jobs.

In this regard, Handel (2003:113) cites the case of assembly line personnel, where jobs are highly structured and individual performance may vary. This observation is of great importance to management when

it is considering ways to improve assembly line employees' performance.

In conclusion, the job performance model offers insights into individual and job context factors. In other words, the job context factors are considered as a sort of psychological factor of motivation for bringing about employee performance. The expectancy theory, another model of performance indicator is discussed in the next section.

3.3.3.7 The expectancy theory

The conventional expectancy theory holds that effort will only lead to performance if the associated outcomes are valued and held in high regard (Swanepoel, *et al*; 2008:334). According to Fairbank, *et al* (2003), "the expectancy theory holds that employees are most strongly motivated to participate when they can do so successfully and when they know that their participation will result in an outcome that they value."

The Porter and Lawler expectancy model of motivation, discussed in Staw (2004:35) is depicted in figure 3.7. This model is a combination of the fundamentals of Vroom's original expectancy approach with a number of modifications. Whereas Vroom's model suggests that satisfaction leads to performance, the Porter and Lawler model argues that it is performance that leads to satisfaction. This represents a significant departure from the early expectancy theory and supplements the empowered employee indicators.
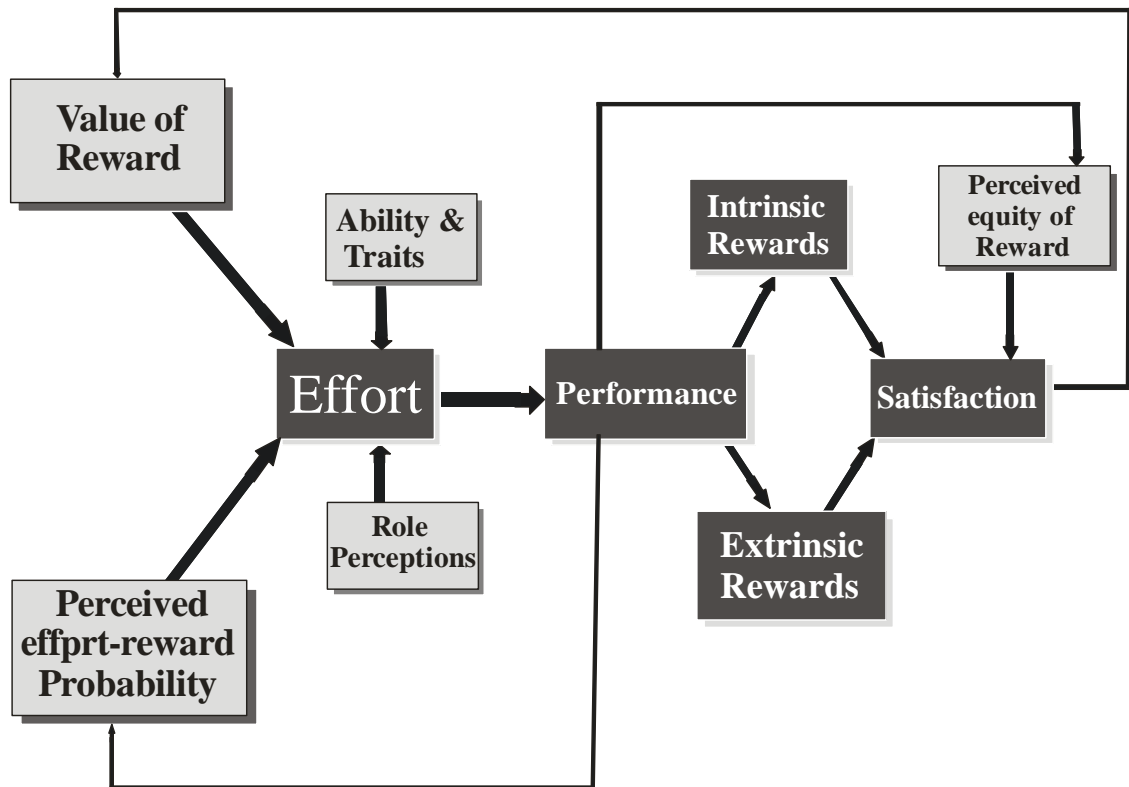
Figure 3.7   The Porter-Lawler Model

Source: Adapted from Poisat (2006)

Poisat (2006: citing Staw, 2004:35) summarizes the Porter-Lawler model thus:

> "The Porter-Lawler's model showed that abilities and
> traits as well as role perceptions are part of individual's predictor
> for the ability to perform. The perceived value of reward
> together with the effort-reward probability combines at the
> outset with individual ability and role perceptions in determining
> whether effort will be expanded to yield performance.
> Performance results in intrinsic rewards are associated with
> feelings of accomplishment and achievement, whereas extrinsic
> rewards denote tangible

outcomes such as pay, awards and promotion. In the perceived equity section of the model individuals judge whether their performance delivered to the organization is commensurate with the rewards received and if found to be equitable, only then will the individual feel satisfied. The more equitable the rewards are perceived, the more individuals will perform and in turn exert more effort in pursuance of valued outcomes."

The expectancy theory holds very important suggestions for leaders within the organizational context. Some of these inferences are listed below;

➢ Organizational leaders must set attainable performance standards for employees and provide the necessary support, such as training, to assist them in achieving the set standards;

➢ They must provide employees with feedback on how they are performing;

➢ They must ensure that rewards are clearly linked to set performance standards. Employee's achievable suggestions and involvement must be rewarded appropriately through promotion, bonuses and other forms of reward as depicted in the company's reward policy ; and

➢ They must ascertain the personal goals/aspirations of subordinates and equitably link these to organizational rewards. All rewards must be structured to satisfy employee's personal aspirations (Swanepoel *et al*, 2008:334).

The significance of this model to this research project lies in the identification of employees' abilities and traits, as well as the role perceptions of individuals in respect of the degree of effort needed to expand the organizational suggestion scheme, contributions and decision making processes. Of further importance is the nature of the intrinsic rewards that correspond well with the empowered employees' notion mentioned in section 3.2.

3.3.4 Synopsis of motivational approaches

The proceeding section on motivation scrutinized the motivational theories of Maslow's hierarchy of needs, the ERG theory, Hertzberg's two-factor theory, McClelland's needs for achievement theory, McGregor's theory X and theory Y and the Expectancy theory with the explicit intent of establishing the underlining drivers/motives of employee's participation and empowerment. Analyses of the various models reveal a number of individual and job related factors supporting employee empowerment, participation and involvement in decision making and the suggestion scheme.

Maslow's hierarchical theory of needs reveal an underlying awareness of the fact that employees are driven by different motivational elements that contribute to motivated behaviours and job satisfaction in the organizational context. Once the physiological, safety and social needs of employees have been met substantially, they will become aware of their self-esteem and be motivated for better level. The McGregor's theory Y and the ERG hierarchy of needs streamlined Maslow's theory to a non-rigid hierarchy of needs since needs fulfilment is not, in practice, a one-dimensional process, as more than one level of needs can be operative in the same person simultaneously. To achieve employee participation and job satisfaction in the workplace, managers

should attend to different levels of needs concurrently (Swanepoel *et al,* 2008:334).

In this regard, Hertzberg's two-factor approach provides a clear demarcation between factors that motivate individuals' satisfaction and dissatisfaction. Motivational factors such as achievement, recognition, responsibility, the work itself, growth and advancement are predictors of employee satisfaction and the individual drivers of employee empowerment. On the other hand, dissatisfaction is a factor of organizational approach that comprises the environment, supervision, working conditions, pay, job security, inter personal relationships and company policies (hygiene factors). It can be construed from Hertzberg's theory that though sound organizational factors will keep employees from being dissatisfied, they will not necessarily lead to motivation. It is the individual factors indicated in the Hertzberg's motivational approach that motivate employees' participation and empowerment.

McClelland's need for achievement theory reveals a number of individual drivers of empowerment and employee involvement in the suggestion scheme and autonomy. This theory discloses the characteristics of individual employees with a high-achievement need as individuals wanting regular feedback and setting reasonably difficult but achievable goals. The description of high-need achievers closely bears a resemblance to those related to empowered employees. The expectancy theory harmonizes most of the theories delineated in this research through its view that an individual's effort, in addition to equitable outcomes, will also be determined by that individual's ability and role perceptions. Also, organizational factors such as pay, reward systems, work design, group structures and the role of the

supervisor/manager are influential variables of employees' predisposition to perform.

3.3.5 Psycho-dynamics of self-efficacy

This section delineates the construct of self-efficacy in order to establish its relationship with performance and determine the attendant influence on empowered employees. Bloisi et al (2003: 239) define self-efficacy as an individualistic belief in the possibility of successfully accomplishing an explicit task or undertaking. Many researchers have confirmed the revolving relationship of success (upward) and failure (downward) that exists between efficacy and performance.

Researchers including Bandura (1989), Gecas (1989), and Gist (1987) in Poisat (2006:180) established strong relationships between high self-efficacy expectations and success in physical and mental tasks, anxiety control, addition control, pain tolerance and illness recovery. It follows, therefore, that an employee's behaviour and ensuing level of performance is largely influenced by the employee's perceived expectation of success in mastering and completing a specific task. Self-efficacy as an important construct in employee's autonomy and involvement in the suggestion scheme in the workplace requires further investigation. This section of the study delineates the dynamics and mechanisms of self-efficacy and its bearing on individual functionality and implications for organization leaders (Swanepoel, *et al*; 2008:643).

3.3.5.1   Mechanisms of Self-efficacy

An employee's perception of self-efficiency is promoted by the intrinsic variables of effectiveness, efficiency and performance. Invariably, these variables are central to organizational success (Swanepoel, *et al*: 2008:6). Figure 3.8 depicts Bandura's (1989:729-730) model of self-

efficacy which describes the sources of self-efficacy that influences the individual's behaviours and, in turn, leads to success or failure. The principle of the individual's conviction of successful mastery and execution of tasks (self-efficacy) is determined by four factors, namely, prior experience, behaviour models, persuasion from others and physical or emotional state.

Sources of Self-efficacy beliefs   **Feedbacks**   **Behavioural Patterns**   **Results**

Prior Experience

Behaviour Models

Persuasion from others

Assessment of physical emotion state

HIGH
"I know I can do this job"

Self-efficacy Belief

LOW
"I don't think I can get this job done"

* Be active; select best opportunities
* Manage the situation; avoid/neutralize obstacles
* Set goals; establish standards
* Plan, prepare & practice
* Try hard & persevere
* Creatively solve problems
* Learn from obstacles
* Visualize success
* Limit stress

Success

* Be passive
* Avoid difficult tasks
* Develop weak aspiration and low commitment
* Focus on personal deficiencies
* Don't even try; make a weak effort
* Quit or become discouraged because of setbacks
* worry, become depressed or experience stress
* Think of excuses for failing

Failure

Figure 3.8   Mechanisms of Self-efficacy

Source: Adapted from Bandura (1989:729)

Prior experience hinges on previous responsibilities opportunities; tasks completed successfully; suggested inputs and decisions that were productive and contributory to organizational advancement. Prior experience, according to Poisat (2006:180), is "the strongest influence on self-efficacy beliefs" and therefore the link in the diagram is indicated with a solid line. It is clear from the model that perceptions of high self-efficacy will lead to better interest, motivation, autonomy in workplace, organizational citizenship, efforts being exerted in completing tasks and increased employee involvement. In contrast, low self-efficacy perceptions will result in lower organizational commitment and diminished zeal and attempt at task completion. The two sets of behaviours will in turn lead to success and failure depending on the individual's perception of self-efficacy. Individuals who fall in the category of empowered employees are expected to be associated with positive behaviour in organizational involvement and citizenship. They are motivated by the disposition of confidence and self-efficacy. The cognitive, motivational and emotive correlation between self-efficacy and the individual's behaviour are discussed in the section below.

3.3.5.2 The Influence of Self-efficacy on employees' functioning in the suggestion scheme

Poisat (2006: citing Bandura, 1997:4) opines that individual's self-efficacy has great influence and correlation with their behavioural norms. These influences are summarized as follows:

* **Cognitive:** Individuals with high self-efficacy are inclined to have high aspirations, think soundly, are prone to proactive suggestions, set difficult goals and commit to achieving the goals. They are also likely to dwell on obstacles and personal deficiencies that may obstruct the completion and achievement of a task

* **Motivational:** Individual employees in the workplace tend to motivate themselves by forming beliefs about what they can accomplish and what the likely results are, should they achieve them. This form of motivation is dependent on the employee's belief in whether goals are attainable. Self-efficacy, therefore, will determine how long the individual will persist in reaching goals and the effort to be expanded;

* **Emotive or Mood influence:** This has to do with the ways in which individuals respond to potentially threatening and stressful situations. Emotions play an important role in how individuals view themselves and how they respond to everyday situations. High self-efficacy builds emotional confidence and a sound frame of mind in the workplace. Individuals with high self-efficacy are noted to be less distressed in handling tasks while those with low self-efficacy will tend to amplify risks and impossibilities;

* **Low self-efficacy:** This leads to depression that diminishes efficacy. Feelings of hopelessness and anticipation of their contributions and suggestions not being accepted in the workplace are often prevalent in employees with low self-efficacy (Swanepoel, *et al*; 2008:643; Poisat, 2006:180).

3.4   Delineating the drivers of empowerment

The analysis of the preceding constructs led to the identification of the following drivers of employee empowerment and involvement in the context of the suggestion scheme in the workplace. Two distinct categories of constructs emerged, namely, those that are intrinsic (individually inherent) and those that are related to the job context. The empowerment correlation and the relationship between these individual and job context drivers are depicted in figure 3.9.

Individual drivers represent those factors that are fundamental and inherent to the employee or the person performing the job. Factors mentioned largely in the analyses of the underlining constructs were; ability and skills, intervening and role perceptions, achievement, recognition, responsibility, advancement and growth, and the work itself. To enhance optimum performance, moderate activation of the individual's self-efficacy was proffered, together with the setting of moderately difficult but achievable goals, which correlates with the preferred work environment of individuals a high need for achievement and self-efficacy. Critical psychological features such as meaningfulness of work, responsibility and knowledge of results necessitate specific job requirements such as performance feedback and autonomy. The interconnecting bond between the factors is depicted by arrows as shown in figure 3.9.

EMPOWERED EMPLOYEE

Cognitive   Emotional   Personal

Displayed through Organizational
citizenship and commitment behaviours

INDIVIDUAL DRIVERS

* **Ability and skills**
* **Role perceptions**
* **Motivation**
  Achievement
  Recognition
  Responsibility
  Advancement & growth
  Work itself
* **Need for Achievement**
* **Self-efficacy**

JOB CONTEXT DRIVERS

* **Local work
  environment**
* **Organizational policies**
* **Design of Jobs**
  Employee autonomy
  Performance feedback
* **Local management
  actions and leadership**
* **Rewards**
* **Organizational culture**
* **Goal setting**

Figure 3.9   Drivers of employee empowerment

Source: Adapted from Poisat, 2006

The job context drivers include all those factors closely related to the
work environment that are subjected to organizational and managerial
discretion. Employee empowerment and involvement processes will be
adversely affected by the absence or inadequate application of these
factors. The extensive literature overview and synopsis of several
research studies cited in this research indicate that job context factors

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are important and applicable to automotive components assembly line workers in the following ways:

➢ Job context factors are more relevant to assembly line workers and play a more significant role in determining empowerment than individual psychological factors (motivation), as mentioned in 3.3.1 and 3.2.3.6 respectively;

➢ Work design and organizational policies covering motivating rewards should cater for the teams on the production line for better performance and better organizational commitment;

➢ The job context should be devoid of high stress because stress levels of assembly line workers are higher due to the structured nature of their job and work environment, as mentioned in 3.3.1;

➢ The role of management and organizational leadership are critical in determining the correct job context mix and integration (McDade and McKenzie, 2002:34).

From the above delineation and assertions it is presumed that a best-fit organizational strategy should strike a balance between the contextual variables of the local work environment as reflected in the organization context and the intrinsic motivational factors. This organizational paradigm will bring about an employee empowerment with the display of organizational citizenship and commitment behaviours (refer sections 3.3.1 and 3.3.2).

3.5   Concluding Remarks

This chapter described the various constructs on which the principle of employee empowerment and participation is based. Particular emphasis was placed on the identification of factors contributing to employee involvement and participation in the work context and the assessment of existing theories that elucidate the employee empowerment concept. Traditional and modern approaches to employee motivation, commitment, organizational citizenship self-efficacy and emotion were analysed in order to determine the underlying drivers that underscore employee participation and empowerment.

It is the researcher's conviction, based on a study of the literature investigated, that an employee empowerment approach, although by no means an absolute answer to all performance matters, can greatly advance employee performance with respect to quality, efficiency, innovation, customer care, job satisfaction as well as organizational profitability. Luthans & Peterson (2001:376) and Lawler et al; (2001) indicate that empowered employees in the organization are motivated to perform and take actions that improve business.

Chapter 4: RESEARCH METHODOLOGY AND TECHNIQUES

4.1 Introduction

This chapter describes the philosophical and theoretical arguments that motivate the conduct of this study. It also scrutinizes the techniques and strategies adopted for the research. Aspects of the design of the research together with the supporting methodology are discussed in order to authenticate the quality and importance of the procedures that were applied. The first section begins by bringing into focus the problems, aims and objectives of the research and continues to the explanation of methodology and methods. Subsequently, discussions of literature on the various philosophical assumptions and concepts of the research are presented. These chronological outlines lead to the philosophical position of the research and its justifications. Discussions on the research design and methods adopted are also presented in the light of the context of this research.

4.2 The research problem, aim and objectives

The main problem addressed by this research can be stated as follows:

➢ South African automotive component suppliers are less competitive in the international markets because of a low level of world-class productivity and implementation of organizational principles/techniques that are devoid of continuous improvement. Inadequate employee involvement in Kaizen suggestions technique has proven to be a factor affecting Organizational continuous improvement and this issue is giving rise to the research question/statement: How can South African manufacturers of automotive components achieve world-

class levels of employee participation in the submission of suggestions for continuous improvement?

In view of the above problem statement, the following sub-problem statements deriving from the main problem were formulated:

➢ **Sub-Problem 1:** What are the current levels of the submission of employee suggestions in the South African automotive component industry?

➢ **Sub-Problem 2:** To what extent are these suggestions considered and implemented?

➢ **Sub-Problem 3:** What current mechanisms do South African automotive components suppliers use in encouraging the submission and implementation of employee suggestions?

➢ **Sub-Problem 4:** What are the barriers to the submission and implementation of employee suggestions and contribution within the South African automotive industry?

➢ **Sub-Problem 5:** What best practices or techniques can the South African automotive components manufacturers use to encourage employee suggestions and how can they be implemented?

Given the above problem and sub-problems, the aim of this study is to develop a strategy that will incorporate world-class levels of employee suggestion and participation for continuous improvement in South African automotive component companies in the Eastern Cape. In this regard, the specific objectives of this study include:

1. To assess the current practice and levels of submission of employee suggestions in the South African automotive component industry in Eastern Cape.

2. To evaluate the factors that drive employee participation and suggestions in the automotive components industry in the Eastern Cape.

3. To evaluate the contributions of employees' participation and suggestions in the overall continuous improvement in the automotive components industry in the Eastern Cape.

4. To assess motivational incentives, rewards and other drivers of sustainable employee participation and suggestions for continuous improvement in the automotive components industry in the Eastern Cape.

5. To proffer contributory performance tools for the enhancement of Kaizen suggestion system for the automotive components industry in the Eastern Cape.

From the above mentioned, the methodological opinions and techniques of the research must replicate the variables in the problems and objectives. The next step, therefore, is to clarify the sense of a research methodology and how it differs from research methods.

4.3   Research methodology and methods

Prior to describing the details of the research methodology and methods that were applied in this study, it is necessary to consider the following question: What is research methodology? Sutrisna (2009) defines research as "the collection of data about the world, to build theories to explain the data, and then to test those theories against further data". In the words of Easterby-Smith et al (2003:31), "research is a systematic investigation of a question, phenomenon, or problem using certain principles". Basically, the search for and gathering of facts/data and information for the advancement of knowledge is regarded as research. A research methodology refers to the principles and procedures of logical thought-processes which are applied to a scientific investigation (Sutrisna, 2009; citing Fellows & Liu, 1997). Easterby-Smith et al (2002:31) describe research as a "combination of techniques used to enquire into a specific situation". Research methodology therefore

means the overall strategy designed to achieve the aim and objectives of the research. It can also be illustrated as the procedures and techniques of examination for valuable and reliable representation of the research.

Research methods on the other hand are simply tools used in gathering and analysing data for the research. Put differently, they are described as a subset of the research methodology. Thus, within a research methodology, different research methods or tools may be used to achieve the aim and objectives of the research (Sutrisna, 2009).

The selection of research methodology and methods in the management and social sciences represents the researcher's assumptions about the nature of the social world and the type of knowledge to be obtained (Creswell & Clark, 2007: 5-21). These conceptual assumptions are essential for the research because the researcher's chosen methods must reflect the context of the underlying assumptions. Accordingly, the philosophical foundations or basis and paradigms of research are presented in the coming sections.

4.4   The basis or philosophical foundation of research

The researcher explored the descriptive analysis of the various philosophical assumptions about the nature of the social environment. The analysis generally explores the reasons for learning philosophical issues in research, specifically in reference to research methodology.

There are strong rationales for a proper understanding of philosophical issues in research. Easterby-Smith *et al* (2002) identify three reasons why the study of philosophy may be momentous in research methodology. First, it can help the researcher to refine and specify the

research methods. This includes the type of evidence gathered and its source, the way the evidence is interpreted and how it helps to respond to the research questions. Second, the understanding of research philosophy helps the researcher to appraise different methodologies and methods in order to shun inappropriate use and unnecessary work. The researcher therefore identifies the limitations of a particular approach at an early stage. Third, it may help the researcher to be resourceful and innovative in either choice or adaptation of methods that were previously outside the researcher's experience. In addition, the nature of philosophical questioning often supports in-depth thinking and this frequently generates further questions in relation to the topic under investigation (Crossan, 2003). Thus, understanding philosophical issues provides a sound basis for the methodological argument of the research.

The discussions in this section hinge on three major dimensions or stages of research methodology, namely:
➢ Research philosophy and paradigms;
➢ Research reasoning; and
➢ Research data

These levels of research are necessary because the philosophical position of the research strongly influences the reasoning of the research and both the philosophy and reasoning influence the data requirements and analysis of the research (Sutrisna, 2009).

4.5 Research philosophy and concepts

The most basic consideration and classification of research is the philosophical level or dimension. This level relates to research assumptions based on the most general traits of the universal structure. It encompasses such aspects as the mind, matter, reality, reason, truth,

nature of knowledge and proofs of knowledge (Crossan, 2003; citing Hughes, 1994**).** Basically, research philosophy refers to the philosophical assumptions and activities which implicitly or explicitly direct an inquiry in a study or research. A literature scrutiny of the various philosophical views or analyses reveals that the most prevalent views or positions are ontological and epistemological. Other views such as sociological and axiological assumptions (Neumann, 2000; Easterby-Smith et al, 2002; Shakantu, 2005:132; Okolie, 2011:119) can also be found in the research methodology literature.

4.5.1 The Ontological view and inference

Ontology explains the nature of knowledge and assumptions about reality **(**Pathirage *et al*, 2008). It discusses the claims and assumptions that are made about the nature of reality. The ontological view therefore refers to the researcher's position or answer to the question about the nature of the reality under examination. This assumption about the nature of the world complements the formulation of the research philosophy and so influences the selection of the appropriate research approach and methods.

Shakantu (2004:122; citing Babbie, 1995; Neumann, 2000; Chia, 2002) identify two seemingly contrasting but competing ontological views in which researchers and sociologists can base their methodology. Shakantu (2005) calls these views "parmenidean and heraclitean ontologies". In the parmenidean view or context, "reality is composed of clear entities with identifiable and discrete properties and characteristics". In the heraclitean world perception on the other hand, reality is viewed or seen as "inclusively a process". Okolie (2011:123) believes that these polarised ontological views only provide a shared terminology which can be used to describe objects and/or concepts that

exist, as well as their properties and the relationships between them. Ontological perceptions, therefore, deal with the nature and conception of reality. It studies existence, its basic categories and relationships to determine what types of entities exist (Sutrisna, 2009).

The Realist and the Idealist are the two types of ontological views based on whether the external world has a predetermined nature/structure or not (Johnson & Duberly, 2000; Sexton, 2004). Realists start with a stance of a commonly experienced external reality with a predetermined nature and structure, whereas idealists presume that different observers may have different view-points and that what counts for the truth varies in space and time (Shakanu, 2004:162; Okolie, 2011:123). This view is consistent with the proposition of Gill and Johnson (2002) that research methods can be positioned by taking nomothetic (realist) and ideographic ontologies into account.

Gill and Johnson (2002) define the nomothetic approach as that which utilises quantified methods for data analysis while the ideographic approach deals with the analysis of subjective accounts generated through inside situations and involving oneself in the everyday flow of life. Nomothetic approaches emphasize the importance of basing research upon systematic techniques as well as methods employed in the natural sciences which focus on the process of testing hypotheses. It also emphasizes the explanation of laws and deductions using quantified operational concepts. Ideographic approaches on the other hand, emphasize the analysis of subjective accounts that are generated by getting inside situations. The emphasis is on a theory rounded in empirical observations to gain explanation and understanding. In sum, while experiments and survey methods are associated with the nomothetic view; action research, the case study and ethnography are

associated with the ideographic view (Pathirage *et al*, 2008; Okolie, 2011:124).

However, whichever illustrations or examples of ontological assumptions or views are described by authors, a connecting string in all the examples is provided by the objective and constructive continuum provided by Sutrisna (2009). In this continuum, Sutrisna (2009) explains that objectivism asserts that phenomena and their meanings have existence that is independent from the actors while constructivism asserts that phenomena and their meanings are continually being accomplished by their actors. Put differently, phenomena and their meanings are not only produced through interactions but also in a constant state of revision. These issues are further discussed in section 4.6 under research concepts. The next section deals with the epistemological philosophy of research.

4.5.2 Epistemological philosophy and assumption

Epistemology refers to the claims of what is assumed to exist and can be known. It looks at the theory of knowledge with reference to its methods, validation and possible ways of gaining knowledge in the assumed reality. Simply put, epistemology describes how the researcher knows about the reality and assumptions of how knowledge should be acquired and accepted. Epistemology therefore is concerned with how and what the researcher knows and the questions about how and what is possible to know (Shakantu, 2005:161; Okolie, 2011).

In epistemological undertakings, two most commonly used examples are positivism and interpretivism. Sometimes, these may be referred to as objectivism and subjectivism (Okolie, 2011:123). Easterby-Smith *et al* (2002) in their review of research philosophies refer to the two ends of

epistemological undertakings as positivism and constructionism. The positivists believe that the social world exists externally and that its properties should be measured through objective measures where the observer must be independent of what is being observed. Social constructivism on the other hand stems from the view that reality is not objective and exterior; it is socially constructed and given meaning by people who are conscious, purposive actors with ideas about their world and attach meanings to what is going on around them (Robson,2002). These two fundamentally different and competing schools of thought demonstrate the complexity of the issues embodied in the epistemological and ontological viewpoints.

However, Sutrisna (2009) provides a hyper simplification of these two philosophical viewpoints by stating that positivism mainly takes objectivism as the basis for understanding reality and that there is only one objective reality experienced by all. Similarly, interpretivism mainly takes constructivism as the basis of understanding the reality which is constructed individually and interpreted differently. It must be noted that each of the two dimensions or viewpoints can be considered multi-dimensionally. This is what underlines the two dimensional continuum explained by Sutrisna (2009). The intention of the continuum is to highlight the similarities of the assumptions or links between these philosophical viewpoints. A better explanation of these issues will be presented in the next section on research concepts.

4.6   The Research Concepts

The science of research has its ancestry in philosophy. The philosophy of research can therefore be viewed as a way of describing how research can be conducted and how the real world, empirical data, models and theories relate to each other. A research methodology is driven by certain ontological and epistemological assumptions about the

reality of the social world. These assumptions invariably affect how the research is carried out.

A research paradigm is the fundamental model or scheme which organises the researcher's view and reasoning (Babbie, 2005:34). Social scientists make use of a variety of paradigms to organise how they understand and inquire into social life. Thus, paradigms provide a powerful range of possibilities for structuring a research. Babbie (2005) argues that each paradigm makes certain assumptions about the nature of social reality. By their nature, paradigms are neither true nor false. They merely provide different ways of viewing and seeking explanations. Paradigms may be considered useful or not, depending on the context of the study. Saunders et al (2007) assert that although it is useful to attach research approaches to different philosophies/paradigms, such labelling has no real practical value. However, such representations or attachments provide an understanding of how theory is related to each research philosophy. The researcher must therefore find out ways in which a particular paradigm can be useful and how it can guide the research. It is also important to note that consistency between the aim and objectives of the research, the problem statements/research questions, the methods and personal philosophy of the researcher essentially underpin and drive the research process. At this point, the following sections provide an understanding of the two extremes of research paradigms; positivism and phenomenology.

4.6.1 The positivist concept

The term positivism generally represents the belief in a logically ordered objective reality that can come to be known (Babbie, 2005:34). Positivism which originates from the thinking of Comte (1853) was for

centuries the dominant method of scientific enquiry derived from a study of the natural sciences. Indeed, what could be described as the traditional scientific approach to research has its underpinnings in the philosophy of positivism. The positivist approach to the social sciences assumes that things can be studied as hard facts and that the relationship between these facts can be scientifically established as laws. According to the positivists, these laws have the status of truth and that social objects can be studied in much the same way as natural objects (Shakantu, 2005: 163; Okolie, 2011).

Babbie (2005) suggests that there are three distinct generations of positivist philosophy. These generations follow from the period which allowed the contemplation of social life to break away from religious interpretations and so established human beings as the main characters in the development and accumulation of scientific knowledge. The first generation of these philosophers include Locke, Hume, and Comte. This generation established in the 18th and 19th centuries was associated with the early traditions of positivism. They were followed by the second generation of logical positivism associated with the early 20th century philosophers. These philosophers include Ayer (1936) and Carnap (1932), who are collectively known as the Vienna circle (Crossan, 2003). The third generation emerged in the post war period associated with Hemple (1965).

The fundamental reasoning of positivism assumes that an objective reality exists which is independent of human behaviour and therefore not a creation of the human mind. It suggests that the senses should be used to accumulate data that are objective, discernible and measurable. Any other thing should be rejected as transcendental. This implies that positivism assumes that the real world can only be studied through the

utilisation of methods that prevent human contamination of its apprehension or comprehension (Nongiba, 2008:87).

Logical positivists stress the importance of induction and verification and the establishment of laws. This presents a major departure from the early tradition of positivism. The aim of the logical positivists is to cleanse scientific knowledge of subjective and speculative views. They do this by the use of mathematics and formal logic to analyse statements about the observed world using the process of induction as a means of establishing generalisations and laws. Put differently, the proponents of logical positivism argue that numerical methods and mathematics are considered above the human language of description and so assumed to be the only appropriate method for obtaining facts scientifically. The standard positivists (third generation) emerged after the Second World War and focused on the need for reasoning which moves from theoretical ideas to a logical conclusion through deductive thinking (Okolie, 2011).

The general features of the positivist philosophy have several implications for researchers and social scientists. These implications, according to authors (Easterby-Smith et al, 2002; Pathirage et al, 2008) include:

> **Methodological:** all research should be quantitative and that only quantitative research can form the basis for valid generalisations and laws
> **Value-freedom:** the choice of how and what to study should be determined by objective criteria rather than by human beliefs and interests
> **Causality:** the aim should be to identify causal explanations and fundamental laws that explain human behaviour
> **Independence:** the researcher is independent of the subject under investigation
> **Reductionism:** problems are understood better if they are reduced to the simplest possible elements

A major shortcoming of the positivist philosophy is that it does not provide the means to measure human beings and their behaviour in an in-depth manner. Human beings are not objects and are therefore subject to many influences on their behaviour, feelings, perceptions and attitudes. These attributes are rejected by positivists and regarded as irrelevant; belonging to the realm of metaphysics. Although the positivist approach yields useful data for analysis, these data are limited and therefore provide a superficial view of the phenomenon under investigation. However, the positivist philosophy embraces a conception of truth in which verifiable statements agree with identifiable and ascertainable facts of reality (Crossan, 2003). Positivism therefore promotes a more objective interpretation of reality using hard data from surveys and experiments.

4.6.2 The Phenomelogical concept

A phenomenon is an observable occurrence, experience, circumstance or fact that is perceptible to the senses. Phenomenology is therefore concerned with methods that examine people and their social behaviour. Phenomenology has its roots in the social sciences and so sees the social world as a world of meanings. Thus, the social world is not made up of entities which are external to the subjective experience of its members. The phenomenological or interpretivist perspective offers researchers and social scientists a radical alternative to the positivist methodology. From the phenomenological viewpoint, there is a fundamental difference between the subject matter of the natural sciences and that of the social sciences. Natural science deals with matter which lacks consciousness; its behaviour can therefore be explained as a reaction to external stimuli. But this cannot be said of human beings. Human beings see, interpret and experience the world in terms of meanings and actively construct their individual social reality.

Meanings do not have independent existence; they are rather constructed and reconstructed by actors in the course of social interaction. This clearly explains why the positivist and phenomenological perspectives employ different research methodologies. They proceed from diametrically opposite assumptions about the nature of social reality (SOCYBERTY, 2008).

Phenomenology holds that assumed notions and perceptions are often out of contact with the entities they purport to see, know or interpret; it calls for a return to the foundations of meaning and experience. Okolie, (2011:112) asserts that in phenomenological research, data are collected in the form of words and observations and analyses are based on the interpretation of these data rather than on numbers and statistical manipulations. Authors (Easterby-Smith et al, 2002; Saunders *et al,* 2000; Crossan, 2003; Veal, 2006) have highlighted the main features or elements of the positivist and phenomenological paradigms of research. A summary of these features and research implications are provided in table 4.1.

Table 3.1   Summary of implications and basic features of positivism and phenomenology

Key areas	Positivism	Phenomenology
Basic viewpoints and beliefs	The world is external and objective; the observer is independent; science is value-free.	The world is socially constructed and subjective; the researcher is part of what is observed; Science is driven by human interests and

		motives.
Method of research	Focus on facts; look for causality and fundamental laws; reduces phenomenon to the simplest elements; formulate hypotheses and test them.	Focus on meanings; try to understand what is happening; look at the totality of each situation; develop ideas through induction from data.
Research design	Structural, formal and specific detailed plans	Evolving and flexible
Involvement of the researcher	The researcher remains distanced from the material being researched; Short term contact.	The researcher gets involved with the phenomenon being researched; long term contact; emphasis on trust and empathy.
Preferred strategy	Operationalization of concepts so that they can be measured.	Use of multiple methods to establish different views of phenomena.
Sampling	Large samples and numbers selected randomly	Small samples investigated in-depth or over time/small numbers of cases chosen for specific reasons.

Data collection methods	Experiments, surveys, structured interviews and observation.	Observations, documentations, open ended and semi-structured interviews.
Research instruments	Questionnaires, scales, test scores and experimentation.	Researcher
Strengths	Provides wide coverage of the range of situations	Ability to look at change processes over time

Source: Adapted from Saunders *et al* (2007).

4.6.3   Combined approaches

The need for a sound understanding of philosophical issues in research has been established in section 4.4.   In this section, the combined approach refers to a combination of the whole or parts of different research approaches either originating from the same or different paradigms in a particular research situation (Nongiba, 2008:97; Pathirage et al, 2008; Easterby-Smith et al, 2002). Many researchers discuss the various philosophical stances only from the perspective of their research. Nevertheless, philosophical stances actually portray a bigger picture because the researcher's perception of reality influences to a great extent the conduct of the research**.** Researchers can approach theory building and testing from different directions. While some researchers predominantly use experiments and surveys to test theories, others use action research and ethnography for theory building (Pathirage et al, 2008).

This approach places studies at polar opposites as it infers that the methods are mutually exclusive. This polarization is obvious in the preceding sections of this chapter. Evidently, a synthesis of the discussions on philosophical assumptions and paradigms shows that nomothetic; realist; parmenidean and objective viewpoints or assumptions are consistent with the positivist philosophy (positivism). On the other hand, ideographic; idealist; heraclitean; interpretivist/objective or constructivist viewpoints are consistent with phenomenology. However, the richness of real world situations implies that a particular paradigm or assumption is unlikely to present a complete picture. Simply put, different philosophical assumptions or viewpoints provide different perspectives of the real world. This can be likened to viewing the world through a telescope or an X-ray machine. Each of these can only reveal certain features while blinded to others (Okolie, 2011).

From the foregoing, the following arguments support the possibility of adopting more than one view point in a research. Providing insight into the nature of philosophical stances/paradigms, Babbie (2005:34) argues that paradigms represent a variety of views; each of which offers insights the others lack while ignoring aspects of social life that the others reveal. In their view, Easterby-Smith et al (2002:57) state that the dichotomy between the positivist and phenomenological world views has led to sharp differences of opinion between researchers about the desirability of methods. Easterby-Smith et al (2002) maintain that the practice of research involves a lot of compromises between pure positions. This understanding suggests that seeing positivism and phenomenology as related concepts is useful. Again, the understanding that empirical and theoretical research is a dialectical relationship helps in seeing research approaches as a set of tools or directions which the researcher may draw on as and when appropriate. Anecdotal evidence

shows that most researchers readily agree that research is a function of both philosophical and methodological pluralism even though they know that they must present their research in a particular style or approach (Shakantu, 2004:161; Okolie, 2011:137).

Operations management as a discipline combines highly complex, technical and social systems and is therefore at the centre of natural and social sciences. This implies that positivism (natural science) and phenomenology (social science) are both relevant in operations management research and are best used in a complementary manner. Having established this fact, the philosophical position of this research and the justification for the stance are discussed in the next section.

4.6.4 Research position and justification

An interception between truth and theory exist within the sphere of science. This is usually needed in determining when and if a theory should be accepted as reality (Pathirage *et al*, 2008). This philosophical realism and anti-realism debate explores the basis of a commonly accepted scientific truth. All the philosophical positions or views have their merits and demerits but the adoption of a particular view point depends on the situation or context of the research. Given the problems highlighted in section 4.2, this research taps into the rich varieties of the theoretical perspectives that can be brought to bear on the study. This multi paradigmatic position follows from the research context (enhancing the Kaizen suggestion scheme) and the complexity of information required to shed light on the performance and management of employee involvement in suggestion schemes. This particular field of research falls within operations management and since operations management is at the centre of the natural and social sciences, the researcher believes that the combined approach is most suitable for the

research. In the combined approach, each view point brings special strengths; and each point compensates for the weaknesses of the others. Therefore, the justification for the adoption of the multi-paradigmatic position is presented as follows:

➢ Epistemologically, the research is positivist but phenomenologically driven. Positivist because the problem to be investigated is an objective reality in need of observation and survey. Phenomenological because the location is natural and within an organizational setting (automotive organizations) rather than a laboratory.

➢ Ontologically, the research is parmenidean and realist because the objective of developing an employee suggestion scheme performance evaluation and enhancement structure provides evidence to support generalizations about the Kaizen suggestion scheme for automotive component suppliers in the automotive industry in the Eastern Cape.

It has earlier been stated that the philosophical position of the researcher strongly influences the research reasoning and invariably the research data. This implies that the multi-paradigmatic position of this research must be reflected at the reasoning/methods and data levels of the research. The coming sections provide a discussion on research reasoning,   research data, research design and methods adopted for this thesis.

4.7   Research Reasoning

The next level or dimension of research is the reasoning of research. As stated earlier, this is strongly influenced by the philosophical stance of the researcher. The reasoning of the research refers to the logic of the research, the role of existing body of knowledge gathered in the

literature study, the ways the researchers collect data and subsequent data analysis (Sutrisna, 2009). The research reasoning connects the researcher to the specific approaches and methods for collecting and analyzing the data. Moreover, the research approach or methods can be empirical, non-empirical or a combination of the two. For empirical research, whatever the purpose, empirical evidence is required and this means that the research must be based on data obtained from observation or experience (Saunders *et al*, 2000:45-46). Easterby-Smith et al (2002) refer to this as field work which they say is the study of real organizations or social settings and that the research may be based on positivist or phenomenological paradigms. Nevertheless, there are three main dimensions of empirical research, namely;

➤ Deductive and inductive research
➤ Quantitative and qualitative research
➤ Subjective and objective research

Although these dimensions do not necessarily represent a simple choice, they reflect the extent to which the elements of the research approach apply. Non-empirical research is based on a pre-existing body of knowledge in a particular field. Some researchers depend entirely on this method and are generally known for searching and reviewing literature on a certain subject where the subject may be one of an historical nature. In this case, the research does not lend itself to any other form of investigation (Saunders *et al*, 2000:45-46). The combined approach takes into account both empirical and non-empirical approaches to inform the structuring and execution of research activities. This thesis is contextually empirical and non-empirical and based on this understanding, the reasoning of the research is based on a combination of both approaches. At this point, it is necessary to discuss the deductive and inductive; quantitative and qualitative; and subjective and objective approaches to empirical research.

4.7.1   Deductive research

A deductive research is a study in which theory is tested by empirical observation. It involves the act of moving from the general to the particular. Sutrisna (2009) contends that a deductive research traditionally begins by analysing the literature. That is, studying existing works in the field and providing the context of the research. It continues by identifying and stating a single selected problem leading to the isolation of the major research sub-problems/questions in which the existing knowledge may be inadequate. For example, identified gaps in existing theories/evidence or contradictions to be explored and new contexts for applying previous findings. This is then followed by the formulation of hypotheses which may be in the form of a conceptual model, proposed to address the identified problem and sub-problems. It may further consist of steps to test the hypotheses. Sutrisna (2009) maintains that subsequent data collection using the proposed methods is followed by analysis resulting in findings closely linked to the existing body of knowledge earlier found.

Clearly, a deductive research tends to proceed from theory to data. As Gill and Johnson (2002) assert, a deductive research entails the development of a conceptual and theoretical framework prior to its testing through empirical observation. In this approach, the researcher may have deduced a new theory by analyzing and then synthesizing ideas and concepts already present in the literature. The emphasis here is on the deduction of ideas or facts from the new theory in the hope that it provides a better or more coherent framework than preceding theories. Highlighting a detailed description of the deductive process, Collis and Hussey (2003) introduce the five sequential stages of deductive research as:

- ➢ Deducing a hypothesis from theory

- ➢ Expressing the hypothesis in general terms
- ➢ Testing the operational hypothesis
- ➢ Examining the specific outcome of the enquiry
- ➢ If necessary, modifying the theory

According to Collis and Hussey (2003), deduction is the dominant research approach in the natural sciences where laws present the basis for explanation, allow the anticipation of phenomena, predict their occurrence and permit them to be controlled. A deductive research can be considered in line with objectivism and positivism due to its reliance on a current body of knowledge in composing hypotheses. Since there is only one objective truth, the researcher's investigation can be based on the existing body of knowledge which has been significantly proved and therefore must represent the objective truth (Sutrisna, 2009).

4.7.2 Inductive research

An inductive research is a study in which theory is developed from the observation of empirical reality. In this regard, general inferences are induced from a particular instance which is the reverse of deductive research. It involves moving from individual observation to statements of general patterns or laws (Collis & Hussey, 2003). Inductive research tends to proceed from data to theory (method, data, findings, theory). Within the inductive approach, learning is done by reflecting upon particular past experiences through the formulation of abstract concepts and theories. Hence, the outcome of induction is theory (Gill & Johnson, 2002).

In providing insight into inductive research, Sutrisna (2009) states that this type of research intends to learn about the phenomena under investigation by applying a less structured methodology to obtain richer

and deeper information. In an attempt to provide answers to the phenomena in question, inductive researchers try to keep their minds open for any possible results while proposing further steps for data collection. In certain methodologies for example, the grounded theory, (a methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or evidence) a literature review is not recommended in the early stages, to minimize the possibility of the researcher being influenced by presuppositions. Explanations and theories are then developed by from the observations of the empirical world (that is, based on the data collected).

Induction is the dominant research in the social sciences. Although the deductive/inductive research debate has a long history, Gill and Johnson (2002) claim that the modern justification for taking an inductive approach in the social sciences tends to revolve around two related arguments;

➢ The explanation of social phenomena grounded in observation and experience; and
➢ Criticism of some of the philosophical assumptions embraced by positivism

For most of the researchers working within the inductive tradition, explanations of social phenomena are relatively worthless unless they are grounded in observations and experience. The main difference between deductive and inductive research lies on the use of current body of knowledge and the role of data collection. Deductive researchers formulate hypotheses based on the current body of knowledge and then conduct a data collection and analysis to test the hypotheses. Inductive researchers on the other hand conduct data collection and analysis to come up with findings while using the current

body of knowledge to inform their data analysis as deemed appropriate (Sutrisna, 2009). Inductive researchers argue that theory, inductively developed out of a systematic empirical research is more likely to fit the data and thus is useful, plausible, and accessible (Partington, 2000; Okolie, 201:133).

Another fundamental issue in the deductive/inductive debate is the subject matter of the social sciences and that of the natural sciences as mentioned earlier. Fundamentally, there is an ontological discontinuity between human beings and it-beings. The distinction here is that human beings experience the world, whereas things behave in the world (Pathirage et al, 2008). This distinction underlines the philosophical stances of research. Inductive research therefore can be considered in line with phenomenology and subjectivism or interpretivism. The major differences between inductive and deductive research are provided in table 4.2.

Table 3.2   Differences between deductive and inductive research

Deduction	Induction
Moves from theory to data	Moves from data to theory
Common with natural sciences	Common with social sciences
Approach is highly structured	Approach is flexible and amenable to changes (less structured).
Explain causal relationships between variables.	Explanation is based on understanding of meanings attached to events by human beings (focus on meanings).
Select samples of sufficient size to generalize conclusions.	Pay less attention to the need to generalize.
Reliability is high	Reliability is low with high validity

Formulate hypotheses and test them	Develop ideas through induction from data.

Source: Adapted from Saunders *et al* (2007).

4.7.3 Subjective and objective research

This refers to the extent to which the researcher's prejudices/presuppositions influence the outcome of the research. This can be found in the research paradigm adopted by the researcher. If the researcher is involved in or has an influence on the research outcome; then, the researcher is subjective. If on the other hand, the researcher is distanced from or independent in the execution of the field work; then, the researcher is said to be objective. Empirical research can be objective or subjective depending on the level of involvement of the researcher.

The traditional assumption that in science, the researcher must maintain complete independence if there is to be any validity in the results produced (Easterby-Smith et al, 2002) supports the positivist research paradigm which is mainly objective, but phenomenology by its very nature is subjective. Its use, therefore, requires the involvement in both real world circumstances and involvement (sometimes directly) of the researcher. It must be accepted, however, that such a subjective approach used in a research requires the recognition of any influence or limitation the subjectivity may have on the conduct or findings of the research.

4.8 Research data/research methods

The discussion in this section is anchored on the collection of data based on characteristics generally grouped as quantitative or qualitative.

In order words, data is discussed here in terms of methods of or approaches to data collection. Quantitative data requires a quantitative approach or method and qualitative data requires a qualitative approach or method in the collection and subsequent analysis of the data (Sutrisna, 2009). In positioning the research methods or approaches, the philosophical assumptions and research paradigms must be considered. The following sections provide an overview and discussions of these methods or approaches to research.

4.8.1 Qualitative method/approach to Research

The qualitative method of research is that which uses a naturalist approach to understand phenomena in their context-specific settings (Patton, 2002:39). Qualitative methods have been considered the means of studying complex situations, particularly research involving human beings and therefore yield rich discoveries (Sutrisna, 2009). Qualitative research focuses on the qualities of the phenomena under investigation rather than their numeric measurement. In this method, the researcher believes that real world phenomena need to be assessed from within the context of that reality. The qualitative approach affords the means of providing distinct data and evaluation of theoretical problems and approaches. In broad terms, any kind of research that produces findings which are not obtained from statistical procedures or other quantitative means can be regarded as qualitative research. This implies that the findings of qualitative research are obtained from real world settings where the phenomena of interest unfold naturally; hence, the observed reality is related to the researcher's interaction with the phenomenon (Creswell, 2002; Sutrisna, 2009).

Nahiduzzaman (2006) argues that qualitative and quantitative analysis result in different types of knowledge. While the qualitative approach

relies on the underlying phenomenological philosophy; enjoying detailed interview and observation, the quantitative approach relies on the positivist paradigm; enjoying the rewards of both numbers and words. Graziano and Raulin (2007: 129) argue that qualitative research can be used as a method or as a precursor to the quantitative method in less explored areas. It can also be used to provide descriptive information for the generation of theory.

Two major objectives of qualitative research are to describe and analyse the processes through which social realities are constructed; and the social relationships through which people are connected to one another. Shakantu (2004:163) and Okolie (2011:125) emphasise that the approaches to qualitative research include;

➢ Grounded theory which uses principles of the inductive approach to develop theory from data collected using qualitative data gathering techniques such as unstructured interviews and participant observation

➢ The case study, which allows an in-depth investigation of social phenomena using a combination of data gathering techniques. The case approach allows for an in-depth investigation of a particular issue within the context of its relationship with the real world

➢ Phenomenology, which focuses on generating meanings and gaining insights into phenomena by concentrating studies on human experience and the essence of the human experience

➢ The ethnographical research method, which is common to the field of sociology and anthropology. It employs a multi-method of data collection   including participant observation, interviews, conversations, photographs, life histories, documentary analysis and films

➢ Hermeneutics relating to the meaning given to texts, cultures and past civilizations. Its underlying assumption is the interpretivist ideology

➢ The historical research method which is concerned with the process of learning the past through the collection and analysis of relevant information such as records, letters, reminiscences, buildings and artefacts, autobiography and diaries.

Practically, these qualitative approaches may adopt either field research or non-reactive research. Brewer and Hunter (2006:2) define field work as observing and studying people and events first hand in natural social settings, whereas non-reactive research employs un-obstructive observational techniques, artefacts, archival records, official statistics or by-products of past social life. The assumptions underlying the qualitative research deny an investigation of the world out there; and rather pursue the meanings, interpretations and logic that the social actors attach to world matters.

4.8.2 The Quantitative method/approach to Research

Quantitative research is research that utilizes quantitative methods for data analysis. This research emphasizes the importance of basing research upon systematic techniques and methods employed in the natural sciences. The approach focuses on the process of testing hypotheses (Pathirage et al, 2008). The quantitative research method seeks to gather factual data and study relationships between facts. The analysis of quantitative data yields quantitative results and conclusions are drawn from the evaluation of these results based on theory and literature.

Quantitative researchers seek the causal determination, prediction and general isolation of findings. Thus, the methods employed are also known as scientific methods. Sutrisna (2009) argues that the quantitative approach positions the researcher as a neutral observer of the phenomena in question in order to maintain distance or objectivity from the research subject. This implies that the quantitative approach is based on the positivist ideal which advocates that mathematics is the perfect tool to understand the worldly creation. Supporting this view, Nahiduzzaman (2006) maintains that researchers who use logical positivism employ experimental methods and quantitative measures to test hypothetical generalization. Nahiduzzaman (2006) further claims that quantitative researchers emphasize the measurement and analysis of the causal relationships between variables.

Quantitative methods are assumed to be repeatable and capable of isolation from reality without compromising the cause and effects being studied. Illustrating the meaning of quantitative research in the explanation of social problems, Nahiduzzaman (2006, citing Bodgan & Biklen, 1998) notes that charts and graphs illustrate the results of quantitative research and commentators employ words such as 'variables, populations and result' as part of their daily vocabulary.

Quantitative research allows the researcher to be familiarized with the problem or concept to be studied. Since the emphasis is on facts and causes of behaviour, the information derived is in the form of numbers that can be quantified and summarised. Furthermore, as the mathematical process is the norm for analyzing the numerical data, the final result is expressed in statistical terminologies. The quantitative research, as supported by the positivist or scientific paradigm, leads us to regard the world as made up of observable and measurable facts. A quantitative researcher attempts to fragment and delimit phenomena

into measurable or common categories that can be applied to all subjects or even a wider range of similar situations.

In this regard, the researcher's method involves the use of standardized measures in order to accommodate the varying perspectives and experiences of people, in a limited number of predetermined response categories to which numbers are assigned (Patton, 2002:2-48). To illustrate this approach, a quantitative researcher may prepare a list of behaviours to be checked or rated by an observer using a predetermined schedule or number scale as an instrument. This quantitative researcher needs to construct an instrument to be administered in a standardized manner according to the predetermined procedures. In doing this, the researcher must ensure that the instrument measures what it is supposed to measure. The significance of this test is to ensure reliability or repeatability of the results. A summary of the major differences between qualitative and quantitative research approaches are provided in table 4.3.

Table 3.3   Distinctions between quantitative and qualitative research methods

Quantitative method	Qualitative method
Developed in the natural sciences to study natural phenomena	Developed in the social sciences to study social and cultural phenomena
Positions the researcher as neutral observer of phenomena	No singular objective reality; observed reality is related researcher's interaction with phenomenon.

Method is based on positivist ideal	Method is based on phenomenological viewpoint; focuses on meanings and perceptions
Quantitative researches are deductive by nature.	Qualitative researches are inductive by nature.
Quantitative methods include surveys, laboratory experiments and mathematical models	Methods include action research, case-studies and ethnography.
Findings are focused on numeric measurements/quantitative data	Findings are focused on illuminating the qualities of phenomena.
Approaches are repeatable, capable of isolation and therefore generalizable	Yield rich but complex data and so not capable of isolation or generalization
Credibility depends on construction of data collection instrument: content related and criteria related.	The researcher is the instrument and so validity depends on the rigour, thoroughness and appropriateness of method

Source: Okolie 2011

4.9   Research Design

A research design is the framework that relates the different constituents of the research methodology. Research patterns are related to the research design while the design is related to the methods of data collection (Denzin and Lincoln, 2000:22). A research design comprises the concrete processes adopted for accessing the subjects of

the study. It is an all-encompassing strategy of how the researcher intends to go about answering the research questions (Saunders *et al.,* 2000:98). This gives a clear direction to the researcher of how to obtain the type of information required for the study; and to extrapolate the causal relations among the variables of the study. According to Sekaran (2003), the various concerns in research design include the purpose of study, the type of investigation, the sampling method to be used, data collection method and the process of data analysis.

The research in this thesis focuses on the ways to overcome the barriers to employee participation in the suggestion scheme in the Eastern Cape Province of South Africa. The literature review showed the important concerns and common realities of the problem under investigation. The review enabled the researcher to identify and understand the theories or models and concepts used by previous researchers in suggestion schemes. Essentially, the review further helped the researcher to identify clearly the unresolved problems of the study which form the main focus of this thesis.

The research design for this research work was characterised by an iterative process using concepts and ideas from both the theoretical literature and the empirical data from the field. The structural framework for the execution of the research is represented in Figure 4.1.

Data analysis and findings

Planning **Data collection**
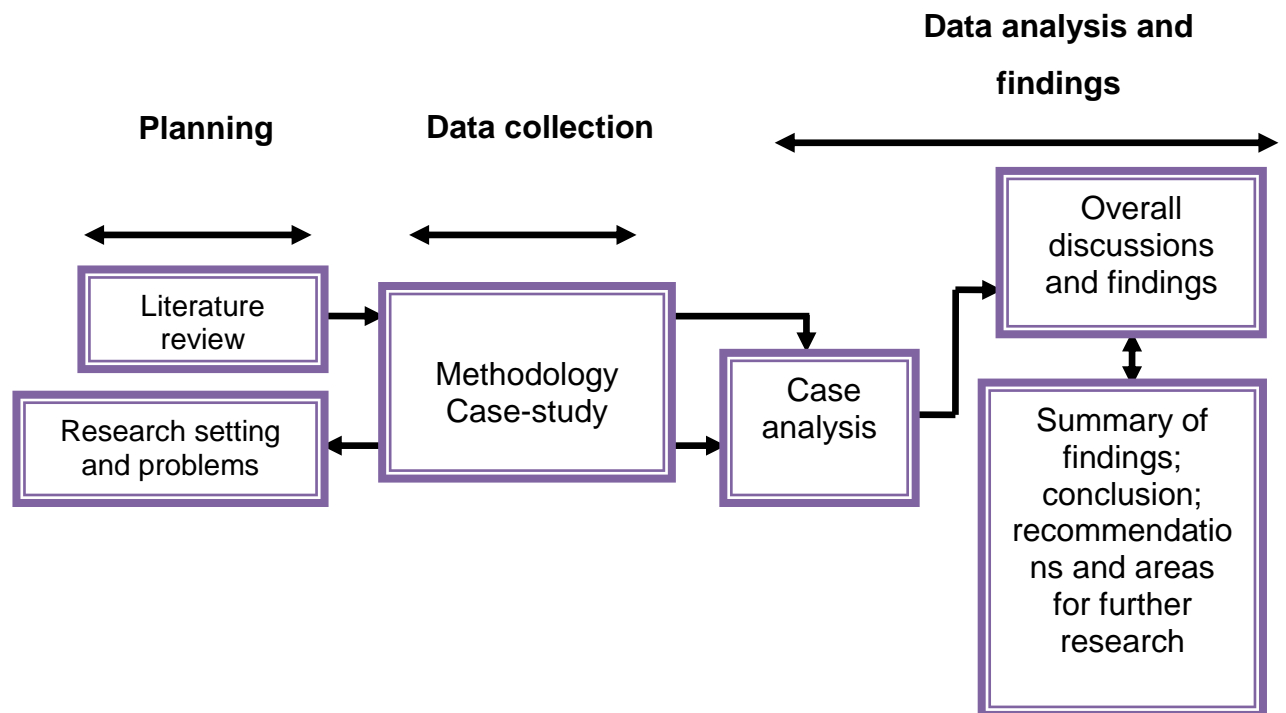
Figure 3.10 General structure of research design

Given that this research focuses on employee/employer organizational relation and the performance of Kaizen suggestions submission, appropriate research instruments were required to capture field data for the analysis. These are discussed in the next section, as well as the overview of the justification of the research approaches or methods that are used in this research.

4.9.1 Research methods

Various research designs were considered by this researcher in order to provide acceptable solutions to the problem and sub-problems of the research. These research design alternatives include those provided by Neumann, (2000); Yin, (2003); and Babbie, (2005:306-325); and they include:

> ➢ Experimental: This involves the conception of an experiment often common in pure scientific research

➤ Surveys: This is often used where large volumes of data are involved with quantitative methods of analysis

➤ Grounded theory: This is an inductive approach to the study of social life. It attempts to generate theory from the constant comparison of unfolding observations. In this regard, theory is generated by observations rather than being decided before the study

➤ Ethnography: This is a phenomenological methodology stemming from anthropology and uses observed patterns of human activity

➤ Action research: This is where the research takes more of the form of a field experiment

➤ Modelling: This is where particular models are developed as the focus of the research activity

➤ Operational research: This looks at activities and seeks to understand their relationships, often with particular emphasis on operational efficiency

➤ Case-study: This seeks to understand social phenomena within a particular setting. It focuses attention on one or a few instances of some social phenomena.

According to Yin (2003:1), the choice of a design or strategy in social science research depends on three conditions, namely:

➤ The type of research question or statement
➤ The control an investigator has over the actual behavioural events
➤ The focus on contemporary as opposed to historical events

In this research, given the exploratory nature of the study; the research problem stated in section 1.2 and the fact that the researcher has little control over the way in which the participants (employees, and managers) would feel about suggestion scheme or respond to the

suggestions participation indicators, the case-study alternative was considered appropriate for the research.

4.9.2 The case-study alternative

Case-studies deal with the provision of credible representations of reality and so give the reader a sense of 'being there' (Walker, 2002). The choice of the case-study alternative for this research is strengthened by Yin's (2003) assertion that case-studies are the preferred strategy when 'how' and 'why' questions are being posed; when the investigator has little control over events and when the focus is on a contemporary phenomenon within some real-life context.

Yin (2003) goes further to say that the essence of a case-study and the central tendency among all types of case-study is that it tries to illuminate a decision or set of decisions; "why they were taken, how they were implemented and with what result". Yin (2003:14) therefore posits that Case-studies are tools for exploring new processes or behaviours; they may also have sub cases entrenched within them and this may have the added advantage of allowing the researcher a deep understanding of the processes and outcomes of cases. The nature of this research requires a deep understanding and an intensive study that enables the researcher to get acquainted with the study setting and win the confidence of the key participants in the organisations that are set for investigation/study.

There is little harmony among authors about what forms a case-study. Thus, the term is used broadly. Gillham (2000:1) defines it as a unit of human activity entrenched in the real world; which can only be studied or understood in context and develops in its context so that precise boundaries are difficult to draw. A case study therefore investigates the

contextual issues and answers specific research questions. Babbie (2005:306) defines it as a thorough examination of a single instance of some social phenomenon such as a village, family or group. Its significant feature is that it limits attention to a particular instance of something. According to Jensen and Rodgers (2001:237-239) case-studies are classified as follows:

> The snapshot case-study, which refers to a detailed and objective study of one research entity at one point in time

> The longitudinal case-study, which involves a quantitative and /or qualitative study of one research entity at multiple time points

> The pre-post case-study: this is a study of one research entity at two time points separated by a critical event. A critical event is one that on the basis of a theory under study would be expected to impact the case observations significantly

> The patchwork case-study, which is a set of multiple case-studies of the same research entity using snapshot, longitudinal and/or pre-post designs. The multi-design approach is intended to provide a holistic view of the dynamics of the research subject

> The comparative case-study, which is a set of multiple research entities for the purpose of cross unit comparison. Both qualitative and quantitative comparisons are generally made

The research presented in this thesis was undertaken as a set of case-studies of the same research using a snapshot approach. Multiple case studies follow replication where each case constitutes a whole study (Amaratunga, 2001). In this way, facts are gathered from various sources and conclusions drawn on them. The rationale behind the multiple case studies method in this thesis is that of replication. Thus, each case was selected so that it either produces similar results or for theoretically predictable reasons produces contrary results. The multiple cases in this study also underline the complexity of the problem under

investigation. The study therefore focused on the case-study organisations as units of analysis.

In selecting case-study organisations, certain factors were considered. According to Yin (2003), four main factors relate to the selection of case-study organisations, namely:

➢ Relevance, which refers to the extent to which the selected organisation suits the purpose of the study

➢ Feasibility, which refers to the practicability of the research being conducted. The researcher should be able to conceptualise, plan, execute and report back on the research project. The case organisation should be within the reasonable reach of the researcher in terms of distance and the researcher should have the appropriate managerial and operational support to ensure a successful completion of the project

➢ Access, which requires that the full co-operation of the organisation should be secured for the duration of the research. Accessibility also requires that the nature of the business of the case-study organisation be non-security sensitive and they should be willing to participate in the research at both executive and operational levels

➢ Applicability, which refers to the extent to which the case-study method can be applied in a particular situation

The case-study organisations, in this study, targeted automotive components suppliers (such as Dorbyl Automotive Technologies, Behr, Schaeffler Automotive, Shatterprufe, etc.) because of their characteristics as renowned manufacturers of original equipment (OE) and suppliers of automotive components; large employee population and interest in organizational growth and operations management. In relation to feasibility; the case-organisations were located within the

same geographical zone or area as the researcher's. Thus, the appropriate managerial and logistics/operational support to ensure a successful completion of the research was assured. For accessibility; the co-operation of the case-organisations was secured for the conduct of the research.

The nature of the research was non-security sensitive. Securing approval and participation at both the executive and operational levels was a lot easier because of the past cooperation and developmental relationship that exist between the researcher's institution and these organizations. In relation to the applicability of the research and the extent to which the case-study method can be applied, factors such as size of the case organizations (automotive components suppliers and the employee populations were considered as units of analysis); industry sector (nature of business focuses on service-type organisations as well as industrial-type organisations); and the status of the focus on the evaluation of employee participation in the Kaizen suggestion scheme were considered.

Given that this research focused on employee involvement in a suggestion scheme and barriers to a qualitative suggestion scheme, appropriate research instruments were required to capture field data for analysis. These are discussed in the next section.

4.9.3 Data sources

There were multiple data sources for this research. Basically, they were classified into two; primary and secondary data sources. The primary data were generated from field-work/case-studies while the secondary data were sourced from official records, previously conducted studies, book publications, journal articles, newspapers, reports and assorted

documents. Most of the secondary data sources were captured in the literature review. However, the primary sources and some secondary sources/instruments are provided in this discussion.

In the case-study approach, a wide variety of data collection methods are available. These include questionnaires, interviews, observation and literature review/documentation. Thomas (2006:69) identifies three main types of data collection methods:

> ➢ Asking questions and listening intensely to the answers
> ➢ Observing events and noting carefully what happens
> ➢ Reading documents

The prospect of using more than one of these methods is proposed by Gillham (2000:13) who states that the "case-study is the main method. Within this, different sub-methods are used: interviews, observations, document and record analysis among others." Saunders *et al.* (2000) in their discussion of the multi-layer approach to research list questionnaires, interviews and observations as data collection instruments. Data collection methods, instruments or techniques are not research methodologies as explained in sections 4.3 to 4.6.2. They can therefore be used with more than one methodology.

This research was designed as a multiple case-study with a mixed method of data collection. Data collection instruments in the study include questionnaires, interviews, observations/walkthroughs, and archival records. Some of these instruments were qualitative, and others quantitative. The qualitative instruments (interviews and observations) were concerned with the experiences and perceptions of the participants (shop floor employees, middle management and the top management) about their participation in the Kaizen suggestion scheme; while the quantitative instruments (questionnaires) were

concerned with issues relating to the ranking of suggestion scheme indicators as identified in the literature. Each of the data collection methods was considered part of an overall approach towards improving the quality and validity of the research data by an approach called triangulation.

Triangulation is an approach intended to increase the quality and validity of research. It is used to provide a confirmation of the research process. Patton (2002; Easterby-Smith *et al.,* (2008) advocate the use of triangulation to avoid bias by the researcher; either in terms of the influence the researcher has on the behaviour of participants or bias personally brought into the conduct of the research by the researcher. This study was designed to use triangulation as part of the empirical data gathering process. Two types of triangulation were explored in this research, namely; data triangulation, and methodological triangulation (Neuman, 2000; Miller and Brewer, 2003; Babbie, 2005). Data triangulation refers to the collection of multiple data sources to obtain views about a particular topic. It involves time, space and persons. In this research, these included published materials available from the case-organizations, interviews with participants, observations and walkthroughs by the researcher and other documents related to the topic. Methodological triangulation which refers to the use of more than one method in a research and each tapping from the rich dimensions of the other. This was achieved through the use of mixed methods and a variety of data gathering tools/instruments.

The approach adopted by the researcher was to conduct an exploratory study of the field setting with the aim of familiarising himself with the eventual respondents, establishing relevant contacts and securing the co-operation of staff and management in the target companies. This involved personal visits, discussions on telephone, and the use of a

letter of introduction (**see Appendix 1**) explaining the purpose of the research and the benefits accruing from the research work. A detailed discussion of the role of each data collection instrument employed in this case-study is provided in the following sections.

4.9.4 Questionnaire surveys and field-work

Questionnaires are data gathering devices designed to draw answers or reactions to pre-arranged questions that are presented in a specific order (Nahiduzzaman, 2006). Thomas (2006) asserts that questionnaires are the most widely used means of data collection, and depending on their design, can vary vastly according to their structure, purpose, how they are administered, method of analysis and interpretation. He summarises the key features to be considered by researchers as follows:

- ➢ The range and scope of questions to be included
- ➢ Types of question (open or closed)
- ➢ Content of individual questions
- ➢ Question structure
- ➢ Question wording
- ➢ Question order

The quality of questionnaires depends on the frankness of the participants' responses and they can be adapted to a variety of purposes, research designs and populations. Very little is available in the literature on the use of questionnaires in qualitative research; particularly, case-studies. This is probably because questionnaires are seen as quantitative and not qualitative data collection instruments (Thomas, 2006). However, Charlesworth and Morley (2000) point out that in order to secure accurate information the questionnaire should be

clear and unbiased, easy to understand, and should keep the respondent's interest and motivation. Charlesworth and Morley (2000: citing Lancaster (2005:139) recommend the following guidelines for the development of a questionnaire:

1. Be as concise as possible
2. Have a logical structure with a clear focus and progression from topic to topic. Commence with factual or background information and then proceed to explore the main areas of interest
3. Use simple questions free from unnecessary jargons, complex question language/structure
4. Avoid ambiguous questions. These are questions that refer to more than one object/issue in the same sentence;
5. Avoid asking leading questions (questions that anticipate a particular response)
6. Use a specific choice of answers. The likert scale is the most widely used scale to capture respondent's agreement/disagreement. The scale comprises a five point verbal scale ranging from strongly agreeing to strongly disagreeing on either ends of the continuum. This researcher used the scale in questions 5 and 7 of section B, section C, section D, and section F.

Gillham (2000:78) suggests that adequate consideration be given to the relationship between the type of question and the data generated by the question. This has a major impact on how the responses can be analysed. Gillham (2000:78) classifies categories of data, as follows:

➢ **Nominal data** is used to describe labels or categories such as male/female
➢ **Ordinal data** can be ranked or ordered. This includes responses captured on a rating scale such as the likert scale

- ➢ **Cardinal data** has order, sequence, and units of measurement

The objectives of the questionnaires in this study include:

1. To provide descriptive information about the target organizations with a view to illuminating the demographic, and operational context of the companies' lean practice, suggestion scheme and management performance objectives
2. To collect data from management and staff on the objective/quantitative aspects of performance in the industry
3. To understand better how staff and management perceive lean practice, employee involvement in the submission of ideas/suggestions, mode of harvest/assessment of suggested ideas, motivation and reward policy within the thirty-four OEM automotive companies in the Eastern Cape.
4. To examine significant predictors of Kaizen suggestion performance in the target companies
5. To direct attention to the observations within the target companies

The design and development of the questionnaires followed three stages, namely:

- ➢ Exploration of the areas/issues to be included
- ➢ Question wording and sequencing
- ➢ Physical design layout

4.9.5 Interviews

Interviews are carried out to source information. According to Patton (2002), interviews may be:

➢ The informal conventional interview, which refers to interviews designed in such a way that questions emerge from the immediate and are asked in the natural context

➢ The interview guide approach, where topics and issues are specified in advance but the sequence is decided by the interviewer

➢ Closed fixed response interview where questions and response categories are fixed and determined in advance

In this research, the informal conventional interview approach was used. The interviews were conducted with some staff in the targeted companies. The personal or face-to-face interviews provided the researcher with the necessary information regarding:

➢ The respondents' views on the lean policy and its practice, employee involvement in ideas submission, evaluation processes, and rewards policy for staff in the target organizations

➢ The impact of staff involvement in the Kaizen suggestion scheme in the target organizations

➢ Impediments/hindrances to employee involvement in the suggestion scheme in the target organizations

The interviews were unstructured to enable the researcher obtain clarifications on some variables which needed further in-depth investigation. They included the informal mode of interviews due to the sensitivity of some of the issues in the study. This helped to remove bias arising from respondents who could have given false information to portray the companies in good stead.

The interviews were concluded by asking the interviewees to talk about other issues which might not have been covered by the researcher's questions. Interviews continued until respondents' responses did not

yield any further new information or additional ideas. Simply put, the interviews were saturated. The interviews lasted between twenty five to thirty minutes with each participant. A graphical representation of the interview process is shown in Figure 4.2.
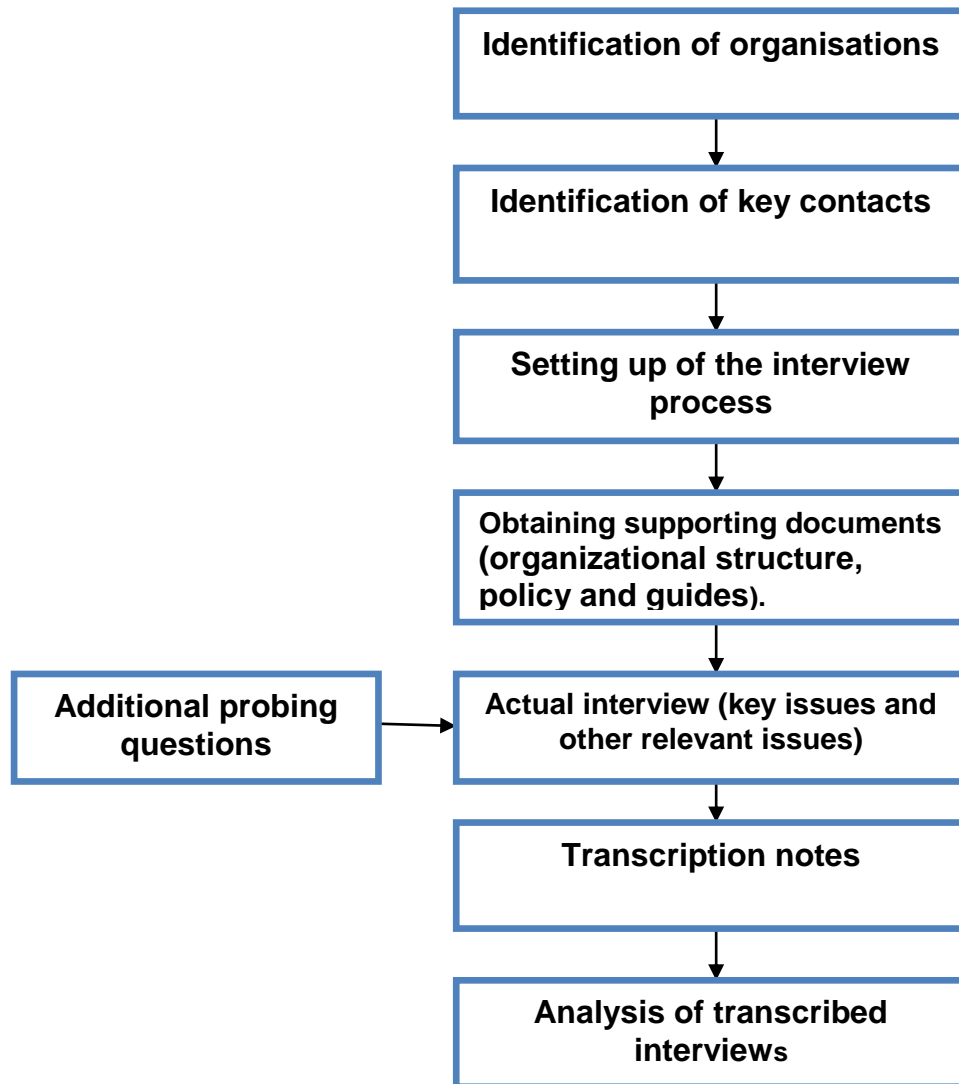
Figure 3.11 The interview process

4.9.6 Study population and sampling technique

A study population is that aggregation of elements from which a sample is actually selected. A sample on the other hand is that element or set of elements considered for selection in a study (Babbie, 2005:196). The nature of the research and the study population largely determine the sample to be selected. Before the empirical study was commenced it was necessary for the researcher to consider whether the entire population of elements or only a sample of the elements of the population should be researched. In this research, the population under study can be defined as the automotive components industry in the Nelson Mandela Metropolitan and the Buffalo City areas (Eastern Cape of South Africa). After careful consideration, the thirty three automotive components organizations that are lean-based and employed more than fifty employees were chosen and included in the empirical study.

Blaike (2003:166) argues that it is often not possible to survey the entire population due to costs, time, quality of information, and difficult population groups. Care should be taken to frame accurately the population from which the sample is taken as generalizations can only be made to the frame. A sample should be carefully chosen so that all necessary characteristics of the entire population could be reflected, easily analysed, and replicate a quality outcome (Babbie *et al*, 2001:185).

Given that the research is a case-study, an appropriate sampling technique was required to balance the objectives of the study and data requirements. Blaike (2003:166) states that the accuracy of estimates of population parameters depends on the sample size. For this reason, the general rule of sampling is, 'the larger the better'.

A sample frame according to Poisat (2006), citing Babbie (2005), is the list or quasi list of units composing a population from which a sample is selected. In this study, the researcher approached the Port Elizabeth Regional Chamber of Business for a list of employers in the automotive components sector. Furthermore, the database was compared to that of the National Association of Automotive Component and Allied Manufacturers (NAACAM) to confirm that all organizations within the researcher's frame were included. The list of employees within the automotive component companies was therefore chosen as the sample frame. The sampling frame, consisting of the above groups of people, was drawn across the target organizations; and from the sample frame, a sample group was selected for questionnaires administration, interviews and observation. A total of thirty three questionnaires (33) were distributed and the researcher was present during the completion of the questionnaires to clarify any ambiguous issues. The sample groups were considered by the researcher to have gained adequate knowledge and experience of lean practice and the Kaizen suggestion scheme in the targeted organizations.

The researcher also considered respondents who are familiar with company policy and management issues. Details of the target surveys are discussed in chapter 5.

4.9.7 Data validity, reliability, ethics and limitations

It is considered good practice for researchers to demonstrate the credibility of their data collection, analysis and findings. They must provide sufficient information on the methods used in the research and justifications for their use. To evaluate the credibility of research findings; validity, reliability and ethical issues are commonly used as criteria (Saunders *et al.,* 2000). Validity refers to the degree to which the

findings of a research are interpreted in a correct way. Put differently, validity determines whether the identified inputs within their attributes actually produce the expected output or result (Sutrisna, 2009). It is the extent to which the results of a study can be verified against the stated objectives. Reliability on the other hand refers to the consistency of results obtained in the research. Simply put, it is the reliability of the method for data collection or the degree to which the findings of research are independent of any accidental circumstances (Okolie, 2011:135; citing Sutrisna, 2009).

Validity may be content, construct or criterion related while reliability issues include scoring agreement, test, equipment forms and internal consistency. Eriksson (2002) defines validity as the quality of the measuring instrument in doing what it is supposed to do. Validity is usually described as the extent to which the rating scale fully captures all aspects of the construct to be measured (in relation to the outcome of a test). Reliability is achieved when the same research process is repeated and reproduces results within the stated confidence limits.

Okolie, (2011: 141) concurs with Eriksson (2002) that the reliability of an investigation is satisfactory if more than one researcher conducts the same research and draws the same conclusions. Thus, reliability deals with the quality of data and this requires the triangulation of the various sources of data which provide similar results from different angles. This requires a thorough demonstration of rigour and clarity of research findings. Parasuraman (2004:294) describes various forms of validity that should be considered by researchers to ensure the authenticity and integrity of their research instruments.   These forms validity are summarised briefly below:

➢   Content validity: This is referred to as face validity. Content validity depicts how best-fit the scale or instrument used is sufficient of

the universe of the content of the property or characteristic that is being measured. The research instrument utilised in this research was subjected to three subject experts and two industry experts in an attempt to increase the instrument's face validity;

➢ Criterion validity: This is established when the measure differentiates the individuals on a criterion that it is expected to predict. It involves concurrent validity or predictive validity. Concurrent validity is established when the scale distinguishes individuals who are known to be different. Predictive validity refers to the instrument's capacity to differentiate among individuals on a future criterion;

➢ Construct validity: This refers to how well the results obtained from the use of the instrument fits the theories around which it was designed. Construct validity comprises three sub- levels namely, convergent, discriminant, and nomological validity. Convergent validity is established when the scores of two different instruments measuring the same concept are highly correlated. Discriminant validity is achieved when, based on theory, two variables are predicted to be uncorrelated, and the scores obtained are proven to be empirically so. Nomological validity involves relating measurements to a theoretical model that leads to further deductions, interpretations and tests that allow constructs to be systematically interrelated;

➢ Internal validity: This refers to whether the identified inputs within their attributes actually produce the expected output or result; and

➢ External validity refers to the extent to which any research findings can be generalised or extrapolated beyond the immediate research sample or setting in which the study took place.

Poisat (2006: citing Green et al; 1988:253) iterates the need for researchers to strive to achieve construct validity. However, content and criterion validities are more reliable and better established than construct validity, which is rarely achieved. The instruments for this

study were designed to reflect the above issues and therefore intended to capture all necessary information to accomplish its purpose.

A major criticism of the use of questionnaires is the fact that they may lack validity. Respondents may interpret questions in a different way from what was intended especially when ranked responses are asked. Again, respondents may not be totally honest in their answers (Eriksson, 2002). To overcome this problem, the researcher pre-tested the questionnaires on sample respondents and personally administered them. The findings were intended to demonstrate rigour and also be repeatable within the context of lean and operations management.

Although the limited number of case organisations for the study does to some extent limit the reliability of the research, it is expected that the combination of many research instruments will minimise this shortcoming. Another reliability problem such as observer bias was minimised by the involvement of only one observer in the field work. This ensured a high level of consistency in the nature the data collected. Furthermore, the research was designed to ensure a maximum degree of objectivity within the scope of the study. This was achieved through the use of triangulation as discussed in section 4.9.4

Ethical issues in research concern the appropriateness of the researcher's behaviour in relation to the rights of the research subjects or those who are affected by the research (Saunders *et al.,* 2000). This means that the subjects affected by the research must have been given the opportunity by the researcher to give free and informed consent about participation. Free and informed consent therefore lies at the heart of ethical research involving human subjects. In this research, all the case organisations that form the basis of the study provided consent. No case organisation was named and the identities of

individuals or groups of people were not disclosed. Simply put, all subjects in this study were anonymous.

4.9.8 Generalizability

This is the extent to which the findings and conclusions of research conducted on a population sample can be generalised or extended to the entire population. Generalizability is based on the frequent occurrence of a phenomenon and so when there is sufficient data to support the validation of a problem statement, a premise exists to generalise the behaviour of such data in similar circumstances (Okolie, 2011; citing Shakantu, 2004:185). However, due to its foundation in probability theory, generalisation cannot be regarded as conclusive (Shakantu, 2004:185). Generalizability is more applicable in quantitative research involving large samples than qualitative research. The rule is, the larger the population sample, the more the results tend towards generalisation. The adoption of mixed methodology involving both quantitative and qualitative data addresses the issue of generalizability of findings in this research.

4.9.9 Chapter Summary.

This chapter presented the methodology adopted for the conduct of this research. It also provided the justifications for the philosophical position and methods of data collection. The research design described in this chapter has linked three important elements of the research methodology, namely; the underlying philosophical assumptions; the research methods/approach; and data collection techniques. Issues relating to validity and limitation of this research have also been discussed. The next chapter presents the units of analysis or the 33 case-organisations observed for this research.

CHAPTER 5: CASE STUDY, DATA PRESENTATION, ANALYSIS AND RESULTS

5.1   Introduction

In this chapter, the researcher presents the case study organisations in the study. The first section introduces the case organisations and presents data in the study setting. Exploratory discussions/interviews conducted with staff and unit heads whose functions centre on the management, operations and evaluation of company operation policy are used as opinions in buttressing the results of the analysed data. The second section of this chapter presents the results of questionnaire surveys administered to respondents. The results are presented as descriptive summaries of the data on the Kaizen suggestion scheme evaluation. Tables, figures and charts are used extensively for data presentations, analysis and interpretation of results. Section 5.2 introduces the case studies.

5.2   Case study

In this research, the thirty three (33) case organisations are explained in terms of location, organisational profile; and the nature and type of services provided to the automotive industry. Thereafter, the research process and the presentation of results follow. To respect the anonymity of the organizations and for ethical reasons, the case organisations will be generalised and summarised in respect of their production functions.

The thirty three case organizations investigated are automotive components manufacturers and suppliers of allied components to companies such as Toyota, BMW, Volkswagen, General motors, and NISSAN among others. They are lean based organizations that are quoted as Original Equipment Manufacturers (OEM) with standardized quality ratings (ISO 9001:2000/TS 16949:2002/ISO 14000 etc.).Twenty

six of the case organizations are located in the Nelson Mandela Metropolitan Municipality while the remaining seven case studies are located in the Buffalo City Metropolis. The organizations, according to the exploratory discussions/interviews conducted with staff and unit heads, are involved in the production of automotive spark plugs, wiper blades, brake linings, automotive engine valves, gaskets, oil seals, heat shields, steel wheels, CV joints, pullmaflex pads, door trim panels, Ferodo brake discs, suspension modules, seat frames, seat slides, height adjusters recliner, automotive silencers and mufflers, brake fluid, automotive lamps, engine components including cylinder heads, propshafts, gearboxes, and windscreens among others.

Having introduced the case organisations in this study, it is now necessary to present and analyse the type of data gathered from the field studies. The next section presents the comprehensive design and analysis of the questionnaire survey used for the data collection in the targeted organizations.

5.3   Development of the Questionnaire

The questionnaires for the study are both structured and semi-structured. The structured questionnaires include simple (multiple choice) and closed questions; while the semi-structured questionnaires include both open ended and close-ended questions. All the questions designed as closed questions were provided with response alternatives. Open ended questions on reasons for inadequate training, non-participation in suggestion/idea submission processes, and personal opinion on rewards and motivation were also included in the questionnaires. All the suggestions and opinions were transcribed by the researcher and used to delineate the analysis of results.

Open-ended questions allow respondents to freely express their opinions and views without prejudice so that adequate information can be obtained in relation to the objectives of the study (Charlesworth and Morley, 2000)). The questionnaire (**see Appendix 2**) was constructed to meet the criteria suggested by Charlesworth and Morley (2000). The questionnaires were divided into six sections (A–F):

➢ The first section required respondents to provide information and data on their positions and the number of employees in their organization. Close-ended, multiple-choice, as well as dichotomised questions were used to elicit the data;

➢ The second section elicited responses on the individuals' and corporate perceptions of the policy of Kaizen/lean principles with particular reference to the lean implementation and duration, lean performance aspects/measures that are identified in the literature, team work issues and training in lean principles, as well as awareness of the Kaizen suggestion scheme. This section was organized into a combination of closed-ended, likert-type scale, and open-ended questions. Statements were formulated according to a five point likert-type scale. The verbal scale utilized was as follows:

Strongly Disagree   Dis-agree   Uncertain   Agree   Strongly Agree

➢ The third section required responses on employees' participation and involvement in continuous improvement strategies of the organizations.

Statements were framed according to the five point likert-type scale with a verbal scale as follows:

Strongly Disagree   Dis-agree   Uncertain   Agree   Strongly Agree

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➢ The fourth section elicited responses on the organizational practice and performance measurement of the suggestion scheme. An open-ended question was used to draw free comment on how suggestion scheme processes are maintained and kept alive within the companies. Statements were formulated according to a five point likert-type scale. The verbal scale utilized was as follows:

Strongly Disagree   Dis-agree   Uncertain   Agree   Strongly Agree

➢ The fifth section was mainly close-ended questions framed to retrieve data on the evaluation of submitted suggestions. Statements were formulated around issues relating to the estimated average number of suggestions per employee per year, the frequency of suggestions assessment and estimated percentage of suggestions implemented.

➢ The sixth section elicited responses on the mode of motivation and rewards for suggested ideas within the organizations. It was a mixture of open-ended question and the usual five point likert-type scale with verbal scale as follows:

Strongly Disagree   Dis-agree   Uncertain   Agree   Strongly Agree

5.3.1 Questionnaire covering letter

The covering letter is the first contact respondents will have with the questionnaire. It is a sort of introductory letter that precedes the real questionnaire. It is therefore important that the covering letter set the

scene and address crucial apprehensions of the respondents. Parasuraman et al (2004:338) believe that the primary purpose of the covering letter is to win the co-operation of respondents. They assert that the contents of the covering letter can positively or negatively affect the response rates of the respondents to questionnaires. Babbie, (2005:196) underlines the importance of covering letters and states that their primary role lies in addressing respondents' concerns and conveying a sense of authority for the research project. Babbie (2005:196) suggests the following guidelines for designing a covering letter that addresses the stated criteria:

➢ The use of an official letter head

➢ Layout is expected to be neat and on quality paper

➢ The letter is required to bear a recent date of despatch

➢ The letter needs to be personalized. It is expected to be addressed to the respondent in person. Addressing it to "Dear Respondent" is to be avoided

➢ The purpose of the questionnaire and the importance of the research should be stated

➢ Indication of a time estimate for the return of the questionnaire is required to be stated

➢ Researcher needs to indicate an assurance of confidentiality

➢ The respondents need to be offered a copy of the results, as this will further enhance their importance to the study

➢ The name of a contact person who will deal with queries need to be requested

➢ The respondents need to be thanked for their participation in the survey

➢ There is a need for both researcher and supervisor to sign the covering letter. The supervisor's credentials and commitment will provide credibility/authority to the research.

Parasuraman et al (2004:340) assert that a lengthy covering letter can be self-defeating and cause respondents to lose interest. Researchers are encouraged to apply brevity and conciseness while necessary qualities are maintained. Babbie et al (2001:260) report that e-mailed questionnaires (electronic surveys) are becoming more popular and are proving to be more efficient than conventional mailed/hand-delivered ones. Moreover, data collected through electronic surveys do not indicate a reduction in data quality (Parasuraman *et al;* 2004:340).

This researcher considered the criteria and suggestions enumerated above in the design of the covering letter (see Appendix 1). Both electronic survey and conventional techniques of questionnaire administration were used in this research.

5.3.2 Pretesting the questionnaire

Parasuraman et al (2004:334; citing Green *et al,* 1988) regard pretesting of questionnaire as a necessity in an attempt to remove ambiguity and correct design defects.   It was pointed out that design flaws in questionnaire can better be detected by external evaluation. Using pretesting enables the researcher to ascertain how respondents understand, interpret, and react to the questions. Feedback from respondents can then be used to revise questions that may cause ambiguity and lead to misconceptions.

Past researchers did not specify a standard specification for the nature and number of pre-tests to be conducted for a specified research project. However, Parasuraman et al (2004:334) suggest that the following guidelines in structuring pre-tests be followed:

- "One pre-test, regardless of the administration method, should be conducted using personal interview. A face-to-face interview may reveal areas of confusion that would otherwise go unnoticed"
- "A second pre-test using the administration method should be conducted. This may divulge problems peculiar to the administration of the questionnaire"
- "Pretesting should be conducted on a small sample of respondents who are familiar with the subject matter. The emphasis is on quality rather than quantity"
- "Pre-test respondents should be similar to respondents who will ultimately participate in the study"
- "Pretesting should involve the researcher's colleagues as well as potential users of the data. This is ideal since colleagues and end users of data are likely to view the questionnaire more critically than survey respondents".

This researcher did pretesting of the research questionnaire for validity before its administration. The initial questionnaire was given to four senior academics, including two Professors who lecture in industrial operations management and human resources management. They were chosen because they have a thorough understanding of employee empowerment, involvement and participation in the Kaizen suggestions scheme/idea submission. They were asked to complete and evaluate the questionnaire with reference to the following:

- The layout of the questionnaire
- The clarity of instructions and language usage
- Topics that may have been omitted
- Possible ambiguities within the questions.

The amended questionnaire was sent to Dr. Jacques Pietersen, a statistician from Nelson Mandela Metropolitan University, for his

statistical perspective and advice. Comments from the pre-tests were used to refine the questionnaire before it was distributed to the target population.

5.3.3 Administering the questionnaire

This researcher got the names and contact details of the organizations operating as automotive components manufacturer/suppliers in the Eastern Cape from the National Association of Automotive Component and Allied Manufacturers (NAACAM) and the Port Elizabeth Chamber of Commerce. A total of thirty three (33) OEM automotive components companies that employed more than fifty people were shortlisted for survey.

Saunder, Lewis & Thornhill (2000: 119) believe that a pre-survey contact is essential in making contact with respondents and gaining their commitment. Each organization identified in the target population was contacted telephonically before the questionnaires were distributed to the respondents. The researcher adhered to the guidelines relating to the development of the questionnaire and the covering letter as discussed in sections 5.3 and 5.3.1 respectively.

The following procedure was followed in administering the questionnaire:

- o Each potential respondent was contacted telephonically to advise him/her that a questionnaire on employee involvement in the Kaizen suggestion scheme would be forthcoming. Respondents' contact details (e-mails) were checked and their preferred method of delivery was ascertained. Ninety six per cent (96%) of the target population preferred to receive and return their questionnaires by e-mail, while four per cent (4%) preferred a

facsimile. Babbie et al (2001:260) indicate that an electronic survey can be used in the same way as traditional mail surveys. E-mail is proving more popular, cheap to administer, and relatively fast to conduct. However, Parasuraman et al (2004:335) caution that e-mail surveys may yield a lower response rate than the traditional/conventional survey. This researcher experienced this problem of the low response rate and there was a need for follow-ups

- o After two weeks, follow-up calls were made or e-mails sent to remind non-responsive respondents to complete the questionnaire
- o A second follow-up was conducted after four weeks where the questionnaire and covering letter was resent to those who had not yet responded.

5.4   Analysis and results of research questionnaire Surveys

The covering letter and questionnaires were sent to the thirty three (33) organizations on 1 June 2011 and respondents were asked to return the questionnaires by 20 June 2011. The geographical dispersion of these organizations is shown in table 5.1 and figure 5.1.

5.4.1 Response rate

The analysis of the companies that were surveyed for this research is shown in figure 5.1 and figure 5.1 in percentages and graphical form respectively.

From table 5.1 and figure 5.1 it can be seen that the majority of organizations surveyed were located in the Nelson Mandela Metropolitan Municipality with only 7 (21%) from the Buffalo metropolis.

Table 5.1   Number of companies surveyed

REGION	NUMBER OF COMPANIES	PERCENTAGE
Nelson Mandela Metropolitan Municipality	26	79%
Buffalo Metropolis	7	21%
Total	33	100%

Source: List of automotive component manufacturers as sourced from the National Association of Automotive Component and Allied Manufacturers and the Port Elizabeth Regional Chamber of Commerce.
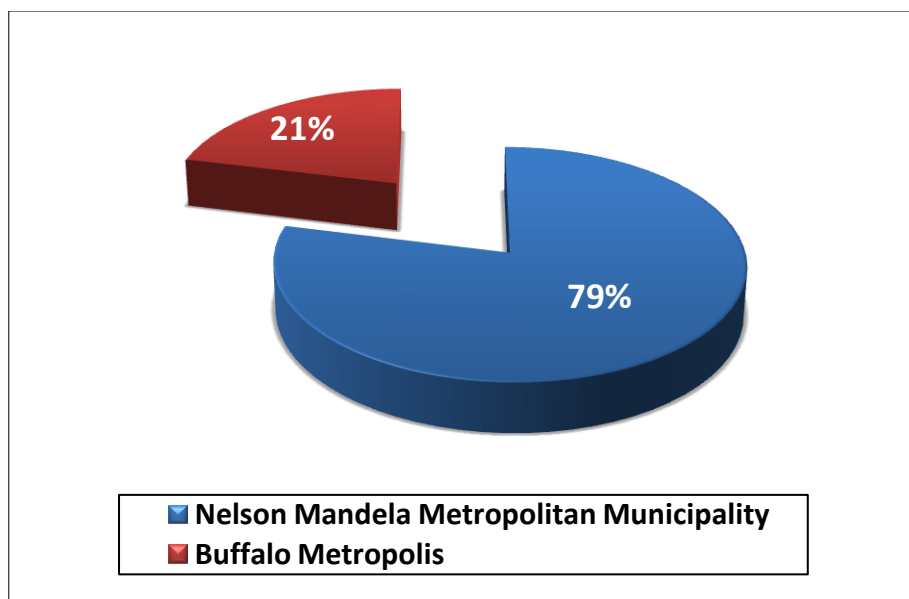
Figure 5.1   Number of companies surveyed

Table 5.2 indicates the number of responses received on or before the due date.

Table 5.2   Number of responses received on or before the due date

REGION	RESPONSES	NUMBER OF RESPONDENTS	PERCENTAGE
Nelson Mandela Metropolitan Municipality	7	26	27%
Buffalo Metropolis	1	7	14%
Total	8	33	24%

From table 5.2, it can be seen that the response rate was poor with only eight questionnaires returned on or before 20 June 2011. Responses from Buffalo Metropolis were particularly poor with only fourteen per cent (14%) of the respondents returning their completed questionnaires.

Table 5.3 indicates the total number of responses received after the researcher had personally and telephonically followed up on individuals who had not returned their questionnaires by the due date of 20 June 2011. Respondents who indicated that they did not have a copy or had misplaced the sent copy of the questionnaires were e-mailed or hand-delivered another copy. They were asked to return the new questionnaires by 30 June 2011. After the follow-up, a total response of twenty one (21) questionnaires from Nelson Mandela Metropolitan Municipality (81%) and six (6) from Buffalo Metropolis (86%) was achieved. This represents a total response of 82 per cent.

Table 5.3   Total number of responses received after follow up

REGION	RESPONSES	NUMBER OF RESPONDENTS	PERCENTAGE
Nelson Mandela Metropolitan Municipality	21	26	81%
Buffalo Metropolis	6	7	86%
Total	27	33	82%

The total response rate of 82% is appreciable. Babbie et al (2001: 261) assert that the overall response rate is a guide to the representativeness of the sample respondents (the population in this case). The higher the response rate achieved, the less chance there is of response bias. Many researchers are uncertain as to what percentage constitutes an ideal response rate. However, Babbie et al (2001:261) report that a response rate within 50% and above is adequate for analysis and reporting. They consider a response rate of 60% to be good while a response rate of 70% and above is considered very good. Saunders et al (2000:158) suggest that the response rate achieved should be compared to the response rate of similar samples or studies. Hutton (2002:159) and Poisat (2005: 243) achieved response rates of 41.6% and 71.8% respectively in their related researches. The response rate of 82% achieved for this study was therefore considered acceptable.

5.4.2 Analysis of biographical information

The section A of the questionnaire elicited general biographical information from respondents. Questions in this section were designed and included in the questionnaire due to their potential value as independent variables. The results of the information obtained from the questions are presented in Tables 5.4 and figure 5.2 respectively. A brief discussion of the data and attendant chart follows the respective tables.

Table 5.4   Responses according to position in company

POSITIONS	RESPONSE FREQUENCY	PERCENTAGE
Casual Worker	0	0
Line Staff	1	3.7%
Supervisor/Group Leader	10	37.0%
Operations Manager	16	59.3%
Total	27	100%
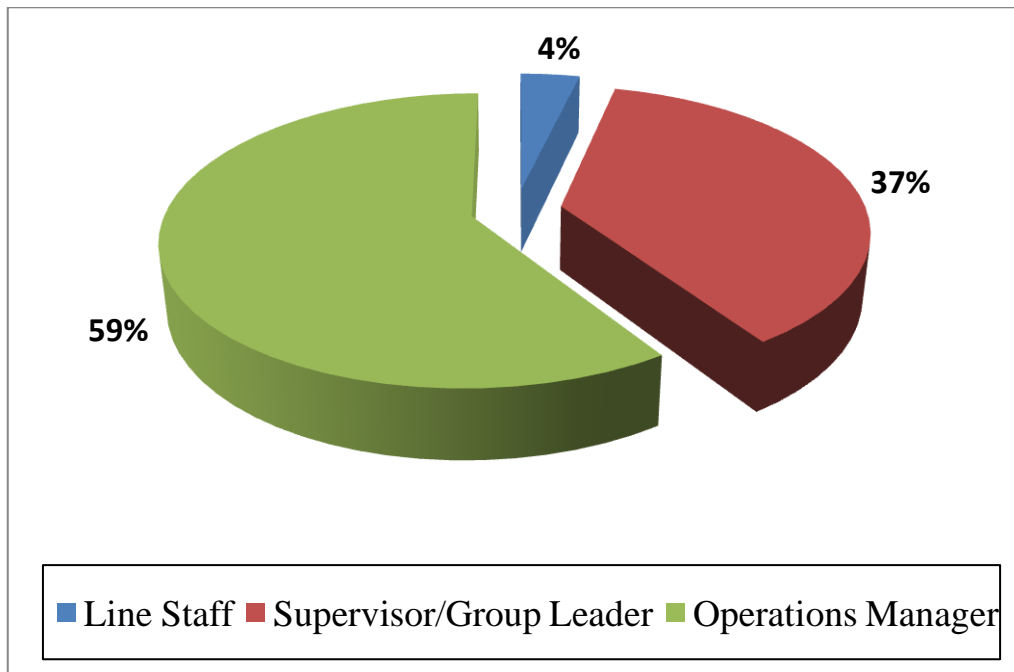
Figure 5.2   Responses according to position in company

The distribution and frequencies shown in table 5.4 and figure 5.2 indicate that the majority of the respondents (59%), were operations managers while thirty- seven (37%) were Supervisors/Group leaders. It can be seen from this chart that a significant proportion of the respondents (96%) were in management positions with adequate involvement in the implementation of company policies and organizational processes. Their responses are believed by the researcher to be credible and useful. Responses according to organizational size of the target companies are shown in table 5.5 and figure 5.3 respectively.

Table 5.5   Responses according to organizational size

ORGANIZATIONAL SIZE	RESPONSE FREQUENCY	PERCENTAGE
0 - 100	13	48.1%
101 - 200	4	14.8%
201 - 300	4	14.8%
301 - 400	3	11.1%
401 - 500	2	7.4%
Above 500	1	3.7%

Figure 5.3   Responses according to organizational size
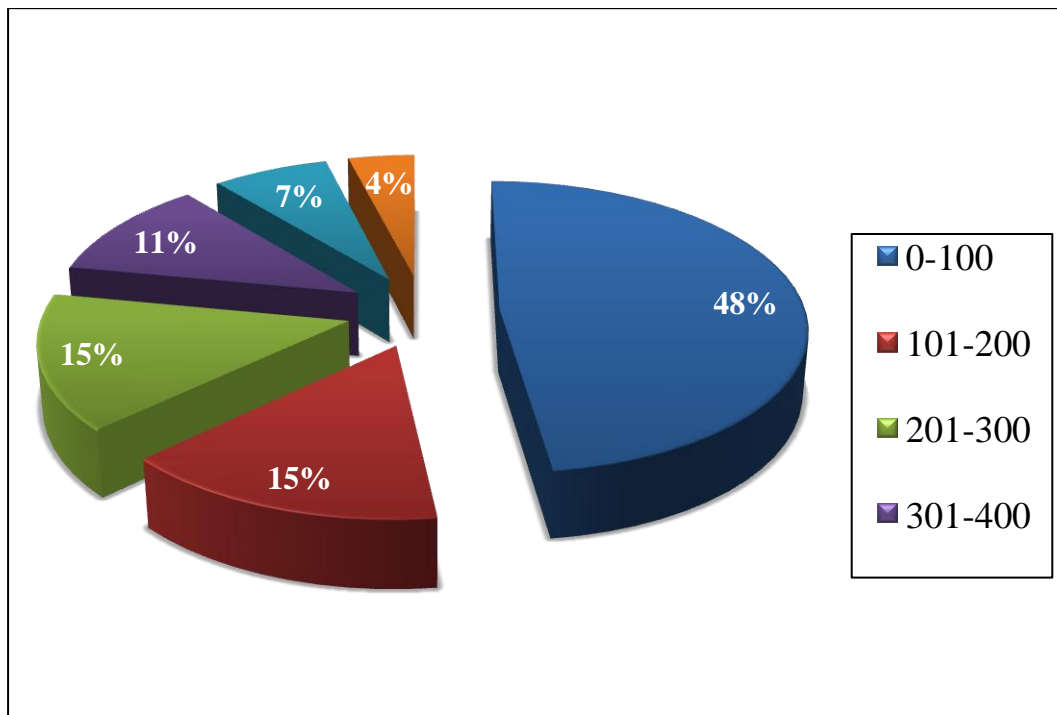
From table 5.5 and figure 5.3 it is obvious that the full spectrum of organizations, ranging from small to large, were represented in the responses. From the figure, 48 per cent of responses depicted organizations with a small workforce (0-100 employees) as well as a medium sized category (101-500 employees) while 4 per cent of the respondents represent companies with a workforce that is above 500. The large proportion of the small and medium sized organizations (96%) depicted in figure 5.3 can be attributed to the fact that this research is concentrated mainly on automotive components manufacturers organizations and not the conventional large-capacity automotive companies that are noted for larger workforces.

5.4.3 Analysis of Organizational adoption/implementation of the Kaizen concept of lean principles and the durations of implementation.

Section B of the questionnaire extracted information on the adoption of the Kaizen concept and lean principles in the targeted organizations. The respondents were asked to state "Yes" or "No" to the question: "Has your company started implementing lean/Kaizen principles?"

Tables 5.6 and figure 5.4 indicate the results of the implementation of lean principles in production processes while table 5.7 and figure 5.5 illustrate the duration of the lean practice within the target organizations respectively.

Table 5.6   Response according to organizations that has started the adoption of lean principles

LEAN (KAIZEN) ADOPTION	RESPONSE FREQUENCY	PERCENTAGE
Yes	25	93%
No	2	7%
Total	27	100%

Figure 5.4   Organizations that have started the adoption of lean principles
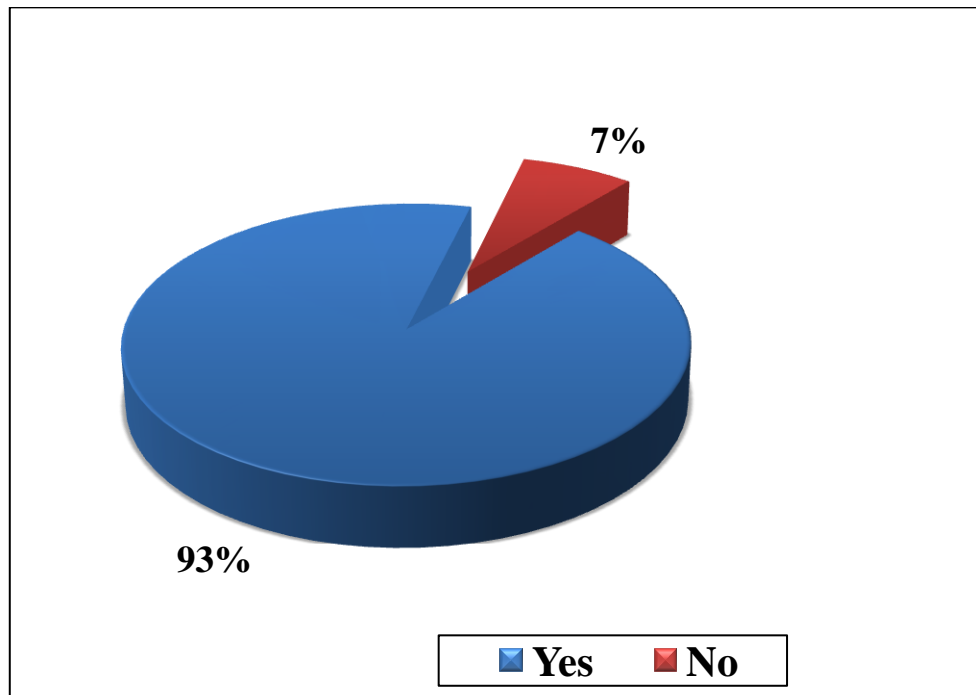
From table 5.6 and figure 5.4 it can be seen that ninety-three per cent (93%) of the respondents believed that their organizations have adopted the lean (Kaizen) principles in organizational processes. This clearly shows that the majority of the automotive components companies in the Eastern Cape of South Africa have adopted the practice of the lean concept of manufacturing in their organizational processes.

From the table 5.7 and figure 5.5, it can be seen that a significant proportion of the respondents (76%) submitted that their organizations had been in the lean practice for more than two years (36% respondents claimed 2-5years, while 40% asserted adoption of more than 5 years). It is clear from this result that majority of the automotive components

companies in the Eastern Cape are not first timers in the implementation of lean/Kaizen production.

Table 5.7   Responses according to the duration of adoption of lean principles

DURATION OF LEAN (KAIZEN) ADOPTION	RESPONSE FREQUENCY	PERCENTAGE
0 - 1 Year	6	24%
2 - 5 Years	10	40%
6+ Years	9	36%
Total	27	100%
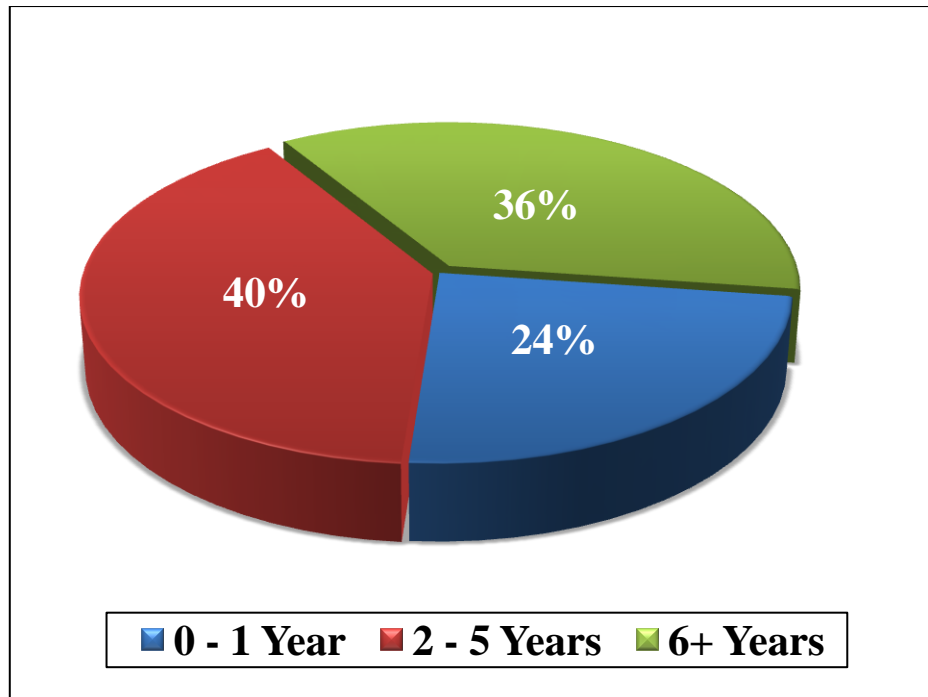
Figure 5.5 **Responses** **according** **to** **the** **duration** **of** **the** **implementation of lean principles**

5.4.4 Analysis and interpretation of the mean and standard deviation for the level of organizational familiarity with lean/Kaizen concepts and features.

In this section, the respondents were requested to rate some important conceptual features of lean within their organizational processes. The research findings are organized in tabular form in the same order as the questions appeared in each section of the questionnaire. The questions were structured so as to obtain information on the current level of implementation and adoption of lean/Kaizen principles in the automotive components organizations, the level of the submission of suggestions, the extent to which submitted suggestions are evaluated, the mode of motivation and rewards for the scheme, as well as the prevailing barriers to the suggestion scheme. The dependent variables depicted in

the questions are developed according to a Likert-type scale. For each item, respondents were asked to indicate whether they strongly disagreed, disagreed, uncertain, agreed or strongly agreed with each statement. Numerical values ranging from one (strongly disagreed) to five (strongly agreed) were used to enable a quantitative analysis of the results. The data were processed and results generated using the database software packages called Excel Spreadsheet and Statistica (Version 9.0). Dr. Jacques Pietersen, a statistician from the Nelson Mandela Metropolitan University, assisted with the analysis and interpretation of the survey data.

In this section, hypothetical statements were presented and requested for ranking. Table 5.8 shows the ranking of the dependent variables that are considered in the questions relating to the implementation and adoption of lean principles in the organizations. Given the analysis presented in table 5.8, the following deductions can be made:

➤ The first deduction is that 93 per cent (74%+19%=93%) of the respondents strongly agreed or agreed that there was an adoption of a teamwork policy in their organization. This statement ranked first in agreement with a mean rating of 4.6 and a high standard deviation of 0.9; while about 4 per cent of the respondents strongly disagreed to the adoption of a teamwork policy. A comparison of the mean score of 4.6 with the aggregate mean of 3.7 and the small standard deviation (0.9) indicates a reliable consistency and high congruency among the respondents' submission on the adoption of teamwork as a conceptual feature in the target organizations.

➤ Again, 93 per cent (30%+63%=93%) of the respondents strongly agreed or agreed that worksheets are displayed conspicuously for the team and operators. This statement ranked second with a mean

of 4.5 (standard deviation of 0.9). The ratings on the workers' autonomy to make changes and improvement suggestions on the worksheets, as well as, the statement indicating that the worksheets are clear and displayed at every work station was widely endorsed by the respondents (strongly agreed or agreed 96% respectively) and received third and fourth place with a mean of 4.4 respectively. A comparison of the mean scores of the lean conceptual features' with the aggregate mean of 3.7 reveals markedly higher scores of 0.8, 0.7 and 0.7 respectively. This comparison shows that there is strong evidence from the respondents to support the conspicuous display of worksheets at every work station while the workers are allowed autonomy to effect improvement changes to them. These results concur with the hypothetical statement which stated that most South African automotive industries did restructuring exercises and adopted lean manufacturing techniques in order to improve manufacturing efficiencies and overall organizational performance through a better use of organizational resources.

➢ Another deduction is that ninety seven per cent (56% + 41%=97%) and eighty nine per cent (70% + 19%= 89%) of the respondents, respectively, strongly agreed or agreed that their organizational staff understand and appreciate lean benefits and that there is potential problems identification, correction and communication during lean production activities. These factors are ranked fifth and sixth with mean scores of 4.3 and 4.0 respectively. Only a trivial proportion of respondents, 3.7% respectively, disagreed with the statement.

➢ Most respondents, (22%+59%=81%), strongly agreed or agreed that team leaders are able to motivate, assist and handle the organization of work at the work place. The act of solving production problems through teamwork was rated strongly agreed or agreed by a large

proportion of the respondents, (48%+30%=78%). These features are rated eighth and ninth respectively with a mean score of 3.9 each. These mean scores are greater than the aggregate mean of 3.7 with a higher score of 0.2 each. Statistically, it can, therefore, be concluded that significant evidence exists in support of the statements.

Issues such as operators' training in problems solving (44%+19%=63%; mean score=3.5); dedicated staff to handle lean change ((48+11=59%; mean score=3.3); emphasis on the Kaizen suggestions scheme in lean Implementation (41%+15%=56%; mean score=3.3); team leaders' ability to interpret and coordinate drawn value stream mapping for production processes (44%+4%=48%; mean score=3.2); availability of dedicated staff or unit to promote lean principles (30%+22%=52%; mean score=3.1); periodic training of staff in lean/Kaizen tools (30%+15%=44%; mean score=3.1); operators understanding of the seven waste tools of lean (44%; mean score=3.1) were compared with the aggregate mean of 3.7. They were all found to be less in value to the aggregate mean; hence it can be concluded that these factors did not have a strong correlation with the significant familiarity of the lean conceptual features in organizational processes.

The rating of the extent of the implementation of lean principles at the workplace was rated least by the respondents (22%+4%=26%) with a mean score of 2.7. The comparison of this mean with the aggregate mean showed a large deviation of 1.0. This result is a pointer to an acceptable indication that the automotive components companies are experiencing a poor implementation of the lean/Kaizen concepts. The opinion of the respondents was that the mode of implementation was lacklustre even though the majority of the automotive components manufacturing companies did adopt the lean/Kaizen systems of production. The poor implementation of lean system initiatives in the

companies can be attributed to the afore-mentioned issues of training and inadequate trainers depicted in section 5.4.4.

It is important to note that every world-class organization is expected to absorb and score high on the analysed features that are considered in this section. Leibowitz (2003) concurs with Neagoe and Marascu Klein (2009) that world-class manufacturing should hinge on the adoption and pursuance of continuous improvement strategies that strike an effective balance between the element of standardization and the innovative forces of the Japanese production systems. The opinion of the respondents was that the mode of implementation was lacklustre, even though the majority of the automotive components manufacturing companies did adopt the lean/Kaizen systems of production.

Table 5.8   Mean and standard deviation for the level of familiarity with the lean/kaizen conceptual features (n=27)

Statements	SD ....SA					M	Sd	Rank
	1	2	3	4	5	Values		
	Ranking (in per cent)							
The organization has dedicated staff to handle the lean change	7.4	29.6	3.7	48.1	11.1	3.3	1.2	11
Management motivated lean understanding and benefits	3.7	14.8	3.7	51.9	25.9	3.8	1.1	9

Staff understanding and appreciation of lean benefits	3.7	-	-	55.6	40.7	4.3	0.8	5
Dedicated staff member or unit to promote lean principles	22.2	18.5	7.4	29.6	22.2	3.1	1.5	14
Adoption of teamwork policy in the organization	3.7	-	-	18.5	74.1	4.6	0.9	1
Teams' leaders motivate, assist and are capable of handling the organization of work	3.7	3.7	11.1	59.3	22.2	3.9	0.9	7
Teams' leaders are able to interpret and coordinate drawn value stream mapping for production processes	7.4	14.8	29.6	44.4	3.7	3.2	1.0	13
Potential problems are identified, corrected and communicated during lean production activities	3.7	3.7	3.7	70.4	18.5	4.0	0.9	6
Availability of clear worksheets that describe jobs at every workstation.	3.7	-	-	48.1	48.1	4.4	0.8	4
Worksheets are displayed conspicuously	3.7	-	3.7	29.6	63.0	4.5	0.9	2
Operators can do suggested changes and improvements to worksheets.	3.7	-	-	44.4	51.9	4.4	0.8	3

	SD	2	3	4	SA	M	Sd	
Operators are trained in problem solving methods.	11.1	11.1	14.8	44.4	18.5	3.5	1.3	10
Solving production problems involves teamwork	11.1	-	11.1	48.1	29.6	3.9	1.2	8
Operators understand the seven wastes of the lean system.	7.4	22.2	25.9	-	44.4	3.1	1.0	16
There is emphasis on the Kaizen suggestion scheme in the lean implementation processes	7.4	22.2	14.8	40.7	14.8	3.3	1.2	12
Excellent implementation of lean principles at workplace	11.1	33.3	29.6	22.2	3.7	2.7	1.1	17
Availability of periodic training in lean (Kaizen tools) within the organization	7.4	33.3	14.8	29.6	14.8	3.1	1.3	15
SD = Strongly Disagree; 2 = Disagree; 3 = Uncertain; 4 = Agree; SA = Strongly Agree; M = Mean; Sd= Standard Deviation								

5.4.5 Analysis of the frequency of training in lean/Kaizen principles

The respondents were requested to rate the frequency of training in the lean/Kaizen system of production in their companies. The closed options indicated weekly, monthly, once a year, twice a year, irregularly, and not at all. The analysis of the responses of the respondents is depicted in table 5.9 and figure 5.6.

From table 5.8, the respondents' rating for the training of staff in lean/Kaizen tools and principles showed a significant proportion of the respondents (7%+33%=40%), strongly disagree or disagree, asserted to non-availability of adequate training in lean/Kaizen system in their organizations; while a forty five per cent respondents (30%+15%=45%) strongly agreed or agreed that there exists a periodic training in lean and continuous improvement strategies. The forty per cent respondents, depicting non-availability of training, is quite a large proportion compared to the forty five per cent claiming otherwise. This assertion is corroborated by the result of the high proportion of the respondents (56%) that claimed that training in lean/Kaizen is irregular; Fifteen per cent (15%) of the respondents claimed that training occurs twice a year; while 22% of the respondents asserted a yearly training exercise. Only two (2) respondents (7%) submitted that training in lean/Kaizen holds on monthly basis (see figure 5.9 and figure 5.6).

The interview survey conducted on selected respondents indicated that there was a lean production system in their workplaces, but the level of periodic in-house or external training in lean/Kaizen concepts was in-adequate and irregular (see appendix 6). This clearly shows that a significant proportion of the automotive components companies in the Eastern Cape are defaulting in regular and proactive training in lean and continuous improvement processes. It is suffice to know that continuous improvement (Kaizen) and lean production requires constant and periodic training for employees in order to be abreast of the dynamic global production and technological growth. A pragmatic organization needs a periodic training and empowerment scheme for employees in order to achieve a quality-related skills, ample productivity and competitive advantage (Shukla, 2006; Poisat, 2006).

Table 5.9   Responses according to the frequency of training in lean/kaizen principles

FREQUENCY OF TRAINING	RESPONSE FREQUENCY	PERCENTAGE
Weekly	0	0
Monthly	2	7%
Once a Year	6	22%
Twice a year	4	15%
Irregularly	15	56%
Not at all	0	0
Total	27	100%
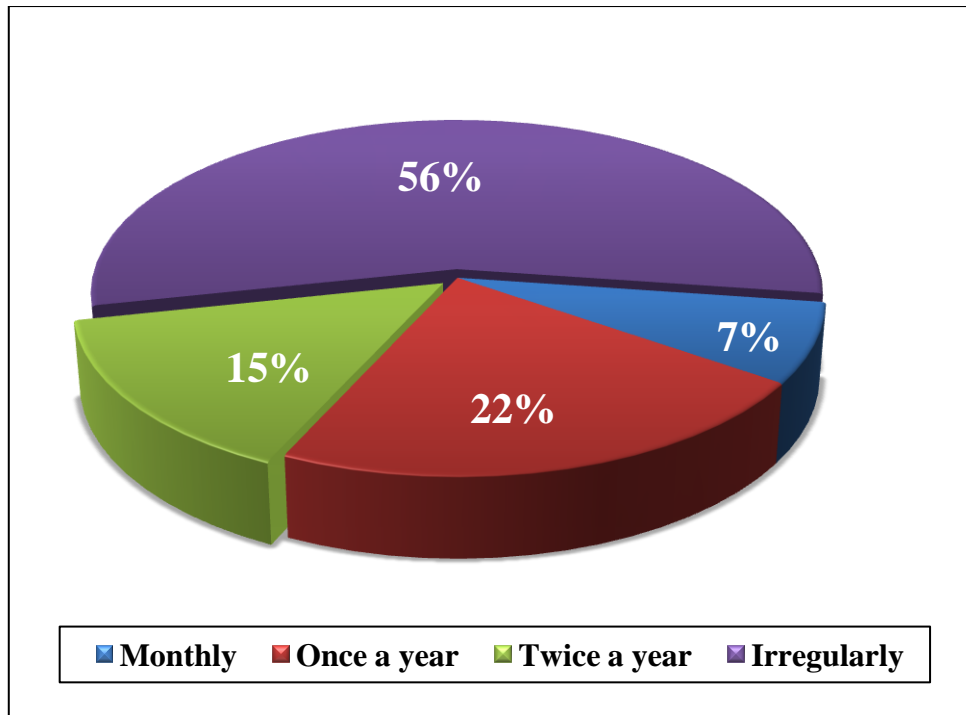
Figure 5.6   Responses according to the frequency of training in lean/kaizen principles

5.4.6   Analysis of the training barriers experienced in the Kaizen principles

The respondents were requested to rate the barriers to training in lean/Kaizen system in their companies. The questions were designed on a 'Yes' or 'No' basis. The Respondents' reactions to training barriers in lean/Kaizen principles are depicted in table 5.10 and figure 5.7. Questions around the barriers mentioned showed that 53% of the respondents believed that the Lean/Kaizen trainers are not well equipped for the job while 41% thought otherwise. Forty- four (44) per cent of the respondents claimed that the lean trainers were not qualified to handle such training while fifty-six (56) per cent of the respondents believed that there were qualified personnel for their training. However,

it is important to note that lean/Kaizen concepts are dynamic manufacturing components that require competent, well-equipped, and experienced personnel. A proficient trainer is therefore required to impart experiential knowledge to the individual through prescribed techniques. An organization without adequate and regular training will lag in the dynamics of organizational growth (Shukla, 2006; Ziel & Antoinette, 2009:80).

In relation to the issue of training barriers shown in figure 5.10 and figure 5.7, the respondents (63%, 52% and 70% respectively) indicated that issues such as tight production schedules, insufficient preliminary preparation of staff and a lack of opportunity for team problem-solving (on-the-job-learning) during the weekdays are other factors that did affected training within their organizations. However, 56% of the respondents denied that their company viewed training in lean/Kaizen as an expensive venture while 44% of the respondents claimed otherwise.

Table 5.10 Responses according to the training barriers experienced in the kaizen suggestion scheme

BARRIERS TO TRAINING		YES	NO	TOTAL
Lean/Kaizen trainers are not adequately equipped for the job	No.	16	11	27
	%	59.3%	40.7%	100%
Lean/Kaizen trainers are not qualified to handle such training	No.	12	15	27
	%	44.4%	55.6%	100%

Tight production schedules do not allow for training programmes.	No.	17	10	27
	%	63.0%	37.0%	100%
Training in lean(Kaizen) is viewed as an expensive venture by the management	No.	12	15	27
	%	44.4%	55.6%	100%
Staff are not given sufficient preliminary preparations towards training	No.	14	13	27
	%	51.9%	48.1%	100%
In-sufficient opportunity for team problem-solving (on-the-job-learning) during the week.	No.	19	8	27
	%	70.4%	29.6%	100%
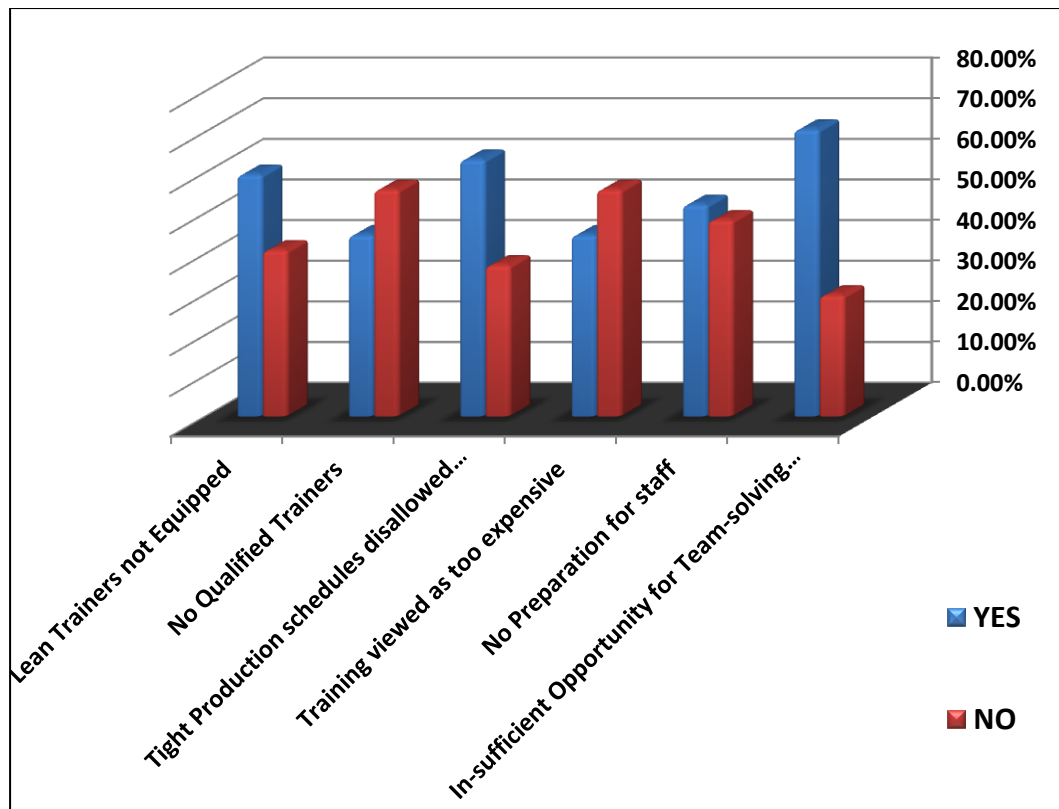
Figure 5.7   Responses according to the training barriers experienced in the kaizen suggestion scheme

5.4.7 Mean and standard deviation for the level of awareness and commitment of the Management and Staffs towards Kaizen Suggestion Scheme.

The respondents were requested to rate the hierarchical support for the ideas/suggestions scheme within their organizational. Ratings were centred on the awareness and commitment of the top management, middle management and the shop floor workers to the organizational suggestion scheme. A Likert scale (1=Strongly-Disagree to 5=Strongly-Agree) was used to measure the extent of these supports.

This section focuses on the analysis of hierarchical awareness and commitment towards the Kaizen suggestion scheme. The respondents' responses to the awareness and commitment levels of the Top management, Middle management and Shop-floor workers are rated. The answers displayed in table 5.11 show that majority of the respondents, (48%+22%=70%), and a significant proportion of respondents (44%+15%=59%) agreed or strongly agreed respectively that top management in their organizations were fully aware and committed to the lean/Kaizen suggestion scheme. These statements are ranked first and second with mean scores of 3.7 and 3.5 respectively. However, divided opinions were achieved for and against the shop floor employees with regards to their commitment to the suggestion scheme.

A comparison of these factors' mean scores with the aggregate mean of 3.4 reveals distinctly higher scores of 0.3 and 0.1 respectively. However, thirty-seven (37) per cent of respondents refuted the commitment of the shop floor workers to the Kaizen suggestion scheme while thirty-three per cent (33%) of the respondents agreed to their awareness and commitment. This statement was ranked lowest with a mean score of 2.9. The low level of awareness and commitment of the shop floor workers to the lean system initiatives is a major factor in the poor implementation of the concepts.

Table 5.11   Mean   and   standard   deviation   for   the   level   of awareness and commitment of the management and staffs towards kaizen suggestion scheme (n=27).

Awareness and Commitment towards Kaizen Suggestion Scheme	SD ....SA					M	Sd	Rank
	1	2	3	4	5	Values		
	Ranking (in per cent)							
Top Management	7.4	7.4	14.8	48.1	22.2	3.7	1.1	1
Middle Management	7.4	11.1	22.2	44.4	14.8	3.5	1.1	2
Shop Floor Workers	7.4	29.6	29.6	29.6	3.7	2.9	1.0	3
SD = Strongly Disagree; 2 = Disagree; 3 = Uncertain; 4 = Agree; SA = Strongly Agree; M = Mean; Sd= Standard Deviation								

5.4.8   Analysis of the mean and standard deviation for the organizational policy for employees' participation and involvement in the Kaizen suggestion processes.

Section C of the questionnaire elucidates the organizational policy for employee participation and involvement in the Kaizen suggestion process. A Likert scale (1=Strongly-Disagree to 5=Strongly-Agree) was used to delineate these policies as shown in table 5.12.

Table 5.12 indicates the results of the investigation of the organizational policy with respect to the employees' involvement in the suggestions scheme.

Respondents were asked to provide ratings to questions on the analysis of their organizational policy for employee participation and involvement in the Kaizen suggestion process. From this table, the majority of respondents, (48%+48% = 96%) strongly agreed or agreed to the fact that workers in their organizations have a sense of responsibility for the success or failure of the overall organizational performance. This factor is rated highest with a mean score of 4.4, while only a trivial proportion of respondents, 4%, indicated a disagreement with the statement. Furthermore, a substantial proportion of the respondents (89%) and (82%) agreed that the employees were encouraged to develop new ideas with new ways of doing things and that organizational goal-alignment is done to ensure that all teams from senior management to shop floor workers focus on the same objective of the suggestion scheme. These statements were rated second and third with mean scores of 4.1 and 4.0 respectively.

The availability of an organizational policy for the promotion of employee involvement/participation in the suggestion scheme was scored lowest, with a mean score of 3.6 by sixty-seven per cent (67%) of the respondents who strongly agree or agree, while twenty nine per cent, (29%) strongly disagree or disagree about the availability of such a policy. Comparison of this factor with the aggregate mean of 4.0 revealed a markedly negative score of 0.4. In other words, this result confirms the hypothetical statement that the implementation of lean/Kaizen suggestion principles in the automotive components companies of the Eastern Cape are devoid of world-class strategies for employee involvement in ideas submission. The claim is further

buttressed (see table 5.13) by the failure of the management to include a recognition and appreciation of the staff's submission of ideas in employee performance appraisal for promotion and awards.

Table 5.12   Mean and standard deviation for the organizational policy for employee participation and involvement in the ideas submission processes (n=27).

POLICY FEATURES	SD ....SA					M	Sd	Rank
	1	2	3	4	5	Values		
	Ranking (in per cent)							
My company has a policy for employee participation in decision-making.	3.7	18.5	11.1	44.4	22.2	3.6	1.1	4
Employees are encouraged to develop new ideas	3.7	3.7	3.7	51.9	37.0	4.1	0.9	2
Goal alignment ensures that all teams and management are focusing on the same goals	3.7	7.4	7.4	51.9	29.6	4.0	1.0	3
Workers have a sense of responsibility for the success or failure of company's overall	3.7	0	0	48.1	48.1	4.4	0.8	1

performance									

SD = Strongly Disagree; 2 = Disagree; 3 = Uncertain; 4 = Agree; SA = Strongly Agree;
M = Mean; Sd= Standard Deviation

5.4.9 Analysis of the mean and standard deviation for the implementation processes of the Kaizen suggestion scheme.

Section D of the questionnaire explicates the processes and implementation of the Kaizen suggestion scheme. Respondents were asked to rate the processes for the implementation of the suggestion scheme in their organizations. A Likert scale (1=Strongly-Disagree to 5=Strongly-Agree) was used to delineate the processes. Respondents were asked to rate the processes for the implementation of suggestion scheme in their organizations.

From table 5.13, it is seen that a large number of the respondents (52%+33%=85%) strongly agree or agree that the organizational culture of their companies is conducive/accommodative to the suggestion scheme. This statement is ranked first, with a mean score of 4.1 and a low level of standard deviation of 0.8; while only a meagre 7 per cent of the respondents claimed otherwise. A comparison of the mean score of 4.1 with the aggregate mean of 3.2 shows a higher score value of 0.9 and signifies strong agreement and a high level of congruence amongst the respondents. The variables "there are accessible, marked, and well place suggestion boxes in the companies" was rated strongly agree or agree by eighty two per cent (52%+30%=82%) of the respondents. This statement is ranked second, with a mean score of 3.9. The statement is ranked higher above the aggregate mean by 0.7, signifying a high agreement among the respondents.

Table 5.13 further showed respondents (55.6%+18.5%=74% and 44.4%+25.9%=70%) asserting that there exists a suggestion scheme unit/committee for the assessment of the suggestion scheme in their organization and that the staff members are motivated to submit new ideas to the assessment unit. These statements are ranked third and fourth, with mean scores of 3.7. Statistically, it can be concluded that significant evidence exists in support of the statements because of the higher difference between the scored means of 3.7 and the aggregate mean of 3.2 are 0.5.

Sixty three (63) per cent of respondents also indicated (strongly agreed or agreed) that there was a relationship of mutual trust among the management and the workers. This factor was ranked fifth, with a mean score of 3.6 and a low level (0.9) standard deviation. This result proved that there is a significant mutual agreement amongst the responses of the respondents. It is important to recall that a favourable organizational culture and mutual relationship among employees and management are mutually inclusive in a participative organization strategy (Gratton, 2004).

The respondents (56%) strongly agree or agree that their management appreciate the staff submission of ideas even when they are not extraordinary. This statement is ranked sixth, with a mean score of 3.5, a higher score of 0.3 above the aggregate mean.

The provision of job security, even if suggestions might lead to job loss, ,as well as management sharing business outcomes with workers were rated by the respondents. A significant proportion of the respondents, (15%+37%=52%), and (15%+33%=48%) strongly agree or agree respectively that management provides assurances of job security to

participants in the suggestion scheme and also shares business results with employees and shows how individuals contributed to them. These features were ranked seventh and eighth, with mean scores of 3.4 and 3.1 respectively. The comparison of the mean score of the issue relating to management sharing business outcomes with staff received a slightly lower value when compared with the aggregate mean. However, the comparison test of the aggregate mean (3.2) on the scored mean (3.4) for management's provision of job security for suggestions scheme participators showed a significant higher value (0.2), signifying agreement and appreciable similarity among the respondents' submission. It is important to recall that assurance about job security is an integral part of intrinsic motivation and enhances team commitment.

However, the mean scores of other factors show a significant disparity in respondents' responses. The results shown in table 5.21 indicate that a substantial proportion of the respondents (48%+4%=52%) disagree or strongly disagree that new and approved suggestions are publicised to the rest of the workers while thirty six per cent (11%+26%=36%) respondents strongly agree or agree otherwise, with a mean score of 3.1. There is a divided rating on training in various means of ideas/suggestions submission, as shown in table 5.21. Forty eight per cent (48%) of the respondents strongly agree or agree while 44% respondents disagree with the training of staff in various methods of ideas submission, with a low mean score as compared to the aggregate mean of 3.2. The low mean score explained why employees are not exposed to the use of modern means (online idea submission, phone-in, short message service) in idea harvesting.

A substantial number of respondents (52%) strongly disagree or disagree that the management uses workers' participation in the suggestions scheme as an integral part of staff performance appraisal.

The low mean score of 2.7 compared to the aggregate mean of 3.2 clearly concurs with this statement. It is important that the recognition and appreciation/reward for idea submission be included in every employee appraisal as an intrinsic motivation for onward commitment and participation.

Table 5.13 shows that large proportion of the automotive components companies are defaulting in the area of a clear/detailed feedback of assessed suggestions and swift assessment of suggested ideas. A considerable proportion of the respondents (56%+7%=63%) and (15%+52%=67%) indicated that slow assessment of suggested ideas and a lack of adequate feedback on submitted suggestions exists. These statements are rated thirteenth and fourteenth with very low mean scores of 2.6 each. Sixty-three per cent of the respondents (33%+30%=63%) strongly disagree or refute the use of modern means (online idea submission, phone-in, short message service among others) in harvesting ideas/suggestions in their organizations. This result is ranked the last (15th), with mean score of 2.4. A comparison of this scored mean with the aggregate mean (3.2) shows a very low difference value of 0.8. This clearly shows that the majority of companies are still operating the conventional box-type approach to ideas submission. Companies cannot afford to retain out-dated means of doing things in a dynamically changing world and production processes. Adequate exposure and training for workers in contemporary ways of harvesting ideas, is needed to keep organizations abreast of the contemporary paradigm.

Table 5.13   Mean and standard deviation for the processes and implementation of the kaizen suggestions scheme in the targeted organizations (n=27)

Statements	SD ....SA					M	Sd	Rank
	1	2	3	4	5	Values		
	Ranking (in per cent)							
Organizational culture is conducive/accommodative to suggestion scheme	7.4	0	7.4	51.9	33.3	4.1	0.8	1
There is a relationship of mutual trust between management and workers	14.8	0	22.2	48.1	14.8	3.6	0.9	5
There exists a suggestion scheme unit/committee for the assessment of the scheme.	22.2	0	3.7	55.6	18.5	3.7	1.0	3
Workers are motivated about the need for the submission of improvement ideas	3.7	14.8	11.1	44.4	25.9	3.7	1.1	4
There are accessible, marked and well placed suggestion boxes in the company.	3.7	11.1	3.7	51.9	29.6	3.9	1.1	2

There are other means of harvesting suggestions (e.g. online-ideas submission, phone-in, sms, etc.)	33.3	29.6	11.1	14.8	11.1	2.4	1.4	15
Staff members are trained in various means of submitting ideas.	44.4	0	7.4	37.0	11.1	3.1	1.1	10
The assessment of suggested improvement ideas is quick.	14.8	51.9	0	25.9	7.4	2.6	1.2	14
Management ensures regular feedback of assessed improvement suggestions.	3.7	55.6	7.4	22.2	11.1	2.8	1.2	11
The feedback is clear and detailed.	7.4	55.6	11.1	18.5	7.4	2.6	1.1	13
New and approved suggested ideas are publicized to the rest of the employees.	3.7	48.1	11.1	11.1	25.9	3.1	1.4	9
Management recognises and appreciate suggestions, even when it is not extraordinary	3.7	22.2	18.5	29.6	25.9	3.5	1.2	6
Employee participation in ideas/suggestions submission is used as part of staff performance appraisal	22.2	29.6	14.8	25.9	7.4	2.7	1.3	12

	SD	2	3	4	SA	M	Sd	
Management shares business results with workers and show how individuals contribute to them.	22.2	22.2	7.4	14.8	33.3	3.1	1.6	8
Management provides assurances about job security, if suggestions might lead to job loss.	22.2	0	25.9	37.0	14.8	3.4	1.0	7

SD = Strongly Disagree; 2 = Disagree; 3 = Uncertain; 4 = Agree; SA = Strongly Agree; M = Mean; Sd= Standard Deviation

5.4.10 Analysis of the performance evaluation/assessment of the submitted suggestions in targeted organizations

Section E of the questionnaire delineates the organizational performance evaluation of the submitted suggestion. Questions on the frequency of assessment, estimated number of suggestions per employee per year and percentage of suggestions implemented were raised for scrutiny. A Likert scale (1=Strongly-Disagree to 5=Strongly-Agree) was used to delineate these policies. Tables 5.14, 5.15 and 5.16 indicate results of the evaluation of these issues.

Table 5.14   Responses according to the frequency of assessment of submitted suggestions by dedicated unit/committee

FREQUENCY OF ASSESSMENT	RESPONSE FREQUENCY	PERCENTAGE
Daily	4	14.8
Once a week	1	3.7

Once a month	15	55.6
Bi-annually	5	18.5
Once a year	2	7.4
Total	27	100%

From the table 5.14, as well as, figures 5.8, 5.9 and 5.10, a substantial percentage of the respondents (56%) acknowledged that the assessment of suggested ideas occurs once a month within their organizations. A considerable proportion of respondents (96%) estimated the number of suggestions per an employee per year to be one to five (1-5), while fifty nine (59) per cent of the respondents claimed that less than ten per cent (<10%) of the suggested ideas were implemented. These results show that the average numbers of suggestions of ideas per staff, frequency of assessment of suggested ideas and the percentage of implemented ideas/suggestions within the automotive components companies are less than impressive. This is a different paradigm compared to the scenario where the 67,000 employees of Toyota averagely submit ten (10) ideas per employee per year with an almost ninety nine (99) per cent implementation a weekly basis (Miller, 2003). Opinion from walk through and interviews with individuals within the targeted organizations showed that the majority of companies merely install suggestion boxes for ideas submission without a concrete means of evaluating and implementing them.
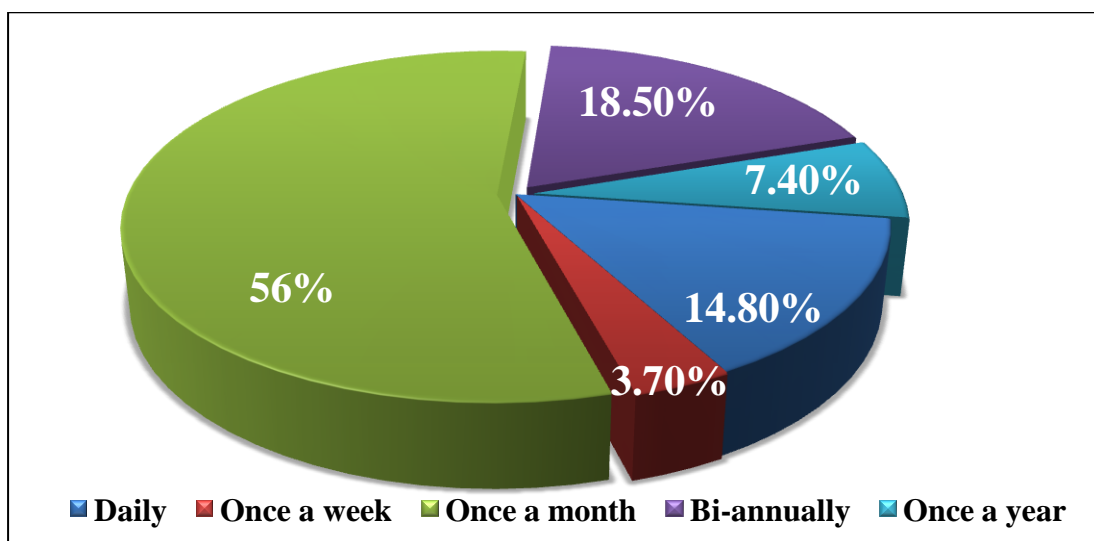
Figure 5.8   Responses according to the frequency of assessment of submitted suggestions by dedicated unit/committee

Table 5.15   Responses according to the estimated average number of suggestions per employee per year

ESTIMATED NUMBER OF SUGGESTIONS PER YEAR	RESPONSE FREQUENCY	PERCENTAGE
None	0	0
1 - 5	26	96.3
Greater than 5	1	3.7
Total	27	100%
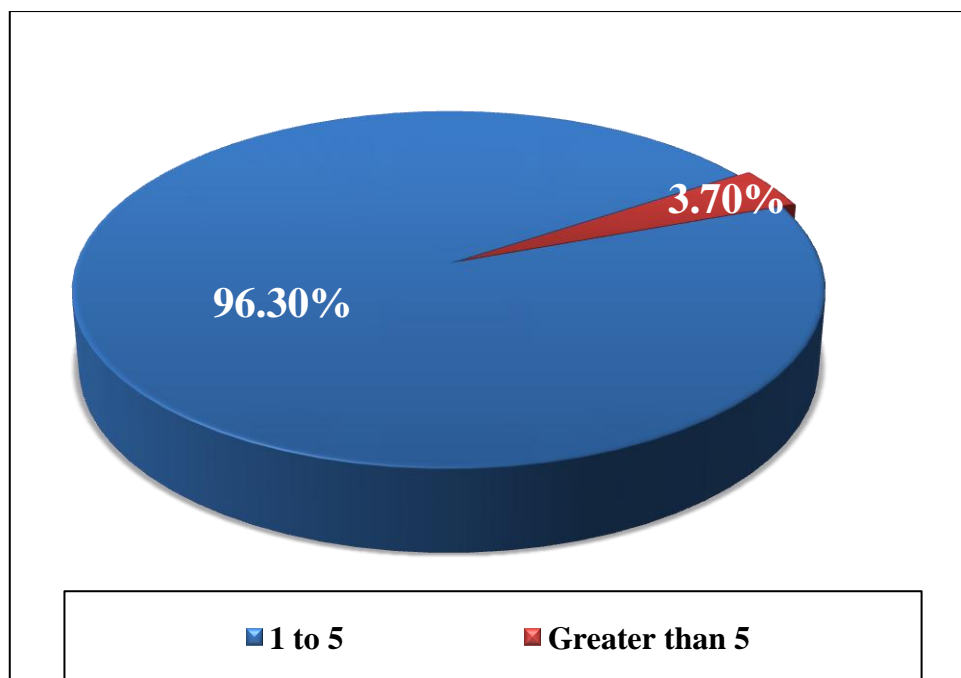
Figure 5.9 Responses according to the estimated average number of suggestions per employee per year

Table 5.16 Responses according to the estimated percentage of implemented suggestions

PERCENTAGE OF IMPLEMENTED SUGGESTIONS	RESPONSE FREQUENCY	PERCENTAGE
Less than 10%	16	59.3%
10% – 50%	8	29.6%
50% - 80%	3	11.1%
Greater than 80%	0	0
Total	27	100%
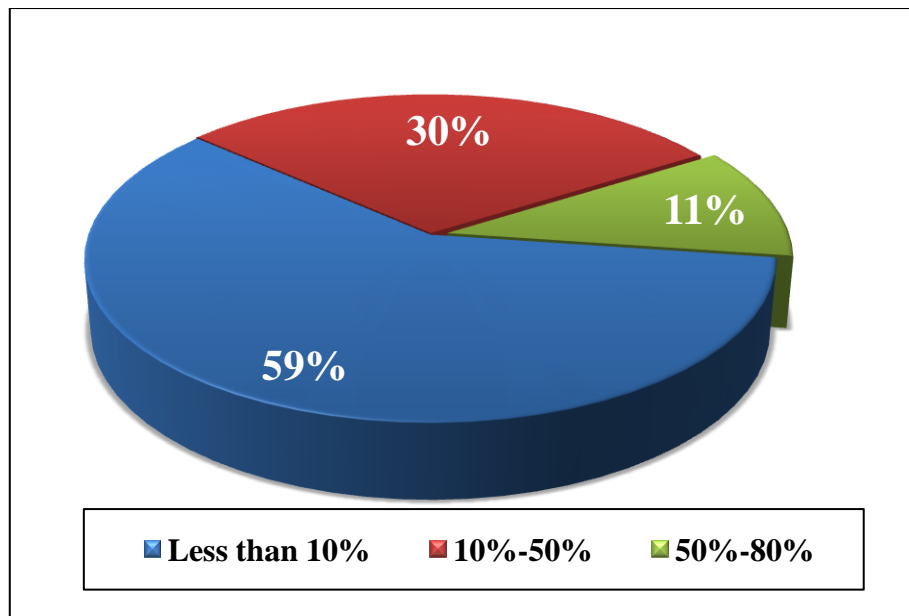
Figure 5.10 Responses according to the estimated percentage of implemented suggestions

5.4.11 Analysis of the mean and standard deviation for the mode of intrinsic rewards for participation in suggestion scheme

Section F of the questionnaire delineates the types of rewards given for submitted suggestions. The respondents were asked questions relating to intrinsic and extrinsic rewards given for submitted ideas/suggestions in their organizations. A Likert scale (1=Strongly-Disagree to 5=Strongly-Agree) was used to delineate these policies. Table 5.17 shows the results of this evaluation.

From table 5.17, it is glaring that most of the respondents, (67%+19%=86%) and (67%+15%=82%), strongly agree or agree respectively that they are praised when they submit a constructive idea, while the suggestion of improvement ideas results in job satisfaction for the employees. These statements were rated first and second respectively, with a mean score of 3.9 each. The significantly low

standard deviations (0.7 and 0.8 respectively) show that there is a high congruency of responses by the respondents.

Table 5.17 Mean and standard deviation for the mode of intrinsic reward for the kaizen suggestion scheme (n=27).

INTRINSIC REWARDS	SD ....SA					M	Sd	Rank
	1	2	3	4	5	Values		
	Ranking (in per cent)							
Suggestion of improvement ideas resulted in job satisfaction.	3.7	0	14.8	66.7	14.8	3.9	0.7	2
Praised when they submitted constructive ideas	11.1	0	3.7	66.7	18.5	3.9	0.8	1
SD = Strongly Disagree; 2 = Disagree; 3 = Uncertain; 4 = Agree; SA = Strongly Agree; M = Mean; Sd= Standard Deviation								

5.4.12 Analysis of the mean and standard deviation for the mode of extrinsic rewards for participation in suggestion scheme

The mode of extrinsic rewards for participation in the Kaizen suggestion scheme was explicated in this section. Respondents were asked to rate the forms of intrinsic rewards for ideas submission in their organizations.

A Likert scale (1=Strongly-Disagree to 5=Strongly-Agree) was used to demarcate the categories. The results are shown in table 5.18.

From table 5.18, a significant proportion of the respondents, (22%+33%=55%), strongly agree or agree that there exists a reward scheme for suggested ideas in their organization, while (26%+22%=48%) of the respondents strongly agree or agree that the reward is in cash form. However, a significant percentage 41% and 44%) of the respondents strongly disagree or disagree with the respective statements. These statements were rated first and second respectively with mean score of 3.4 and 3.1 respectively.

Table 5.18   Mean and standard deviation for the mode of extrinsic reward for the kaizen suggestion scheme (n=27)

EXTRINSIC REWARDS	SD .... .SA					M	Sd	Rank
	1	2	3	4	5	Values		
	Ranking (in per cent)							
There exists a reward scheme for suggested ideas in the company	11.1	29.6	3.7	22.2	33.3	3.4	1.5	1
Rewards are in cash form	14.8	29.6	7.4	22.2	25.9	3.1	1.5	2
SD = Strongly Disagree; 2 = Disagree; 3 = Uncertain; 4 = Agree; SA = Strongly Agree; M = Mean; Sd= Standard Deviation								

CHAPTER 6: ANALYSIS OF THE MAN AND STANDARD DEVIATION OF THE RESULTS

6.1 INTRODUCTION

In the previous chapter, the case study, data presentation and analysis were presented. The analysis of the research data collected and their means with standard deviations were analysed and presented in chapter five.

The purpose of this section is to further analyse and interpret the internal reliability of the data that was obtained during the empirical study. The testing for the internal consistency and reliability of the multi-item scales generated, through the likert-type scale in chapter 5, is done in conjunction with the Cronbach's Alpha coefficients. These delineations are presented in the next section.

6.2 Internal reliability for the summated scales.

In this section, the Cronbach's Alpha coefficient was calculated for summated scales (see Appendix 4) and the results of the coefficients for the multi-item variables for organizational familiarity with and adoption of the lean/Kaizen conceptual features, the organizational hierarchical awareness of the Kaizen suggestion scheme, the organizational policy for employee participation in Kaizen suggestion processes, the implementation of the Kaizen suggestion scheme and intrinsic and extrinsic rewards for participation in the suggestion scheme, are shown in tables 6.1, 6.2, 6.3, 6.4, 6.5, and 6.6 respectively.

The process of generating the Cronbach's Alpha coefficients on the multi-items scale is done so as to test the items' total correlation for reliability/consistency. Statistically, it is not ideal to make inferences

based on the analysis of a single-item. This section therefore deciphers the dependent variables on a summated scale.

The analysis of data was done by entering the data into a computer database software packages (Excel Spreadsheet and Statistica; Version 9.0) and printing reports to provide the required information. These packages enabled the easy manipulation and calculation of the descriptive data and inferential statistics for testing the items' correlation and reliability. The Test of proportion was used to evaluate the statistical significance of findings from the field data. The choice of this tool was guided by the recommendations in Agresti and Franklin (2007:372) that a test of proportions can be used for categorical variables (correct and incorrect predictions).

6.2.1 Internal reliability analysis of the items of organizational familiarity in the lean/Kaizen conceptual features

In this section, the Excel Spreadsheet and Statistica database software package (version 9.0) was used to generate an individual item correlation coefficient for the multi-items relating to the lean conceptual features as shown in Table 6.1.

Table 6.1 **Descriptive** **statistics** **and** **Cronbach's** **alpha** **coefficients for the organizational familiarity with the lean/kaizen conceptual features.**

Item Statements for Organizational Familiarity with Lean/Kaizen Conceptual Features	N	Mean	Standard Deviation	Item Total Correlation
The organization has dedicated staff to handle the lean change	27	3.3	1.2	0.53
Management motivated lean understanding and benefits	27	3.8	1.1	0.82
Staff understanding and appreciation of lean benefits	27	4.3	0.8	0.85
Dedicated staff member or unit to promote lean principles	27	3.1	1.5	0.36
Adoption of teamwork policy in the organization	27	4.6	0.9	0.67
Teams' leaders motivate, assist and are capable of handling the organization of work	27	3.9	0.9	0.69
Teams' leaders are able to interpret and coordinate drawn	27	3.2	1.0	0.46

value stream mapping for production processes				
Potential problems are identified, corrected and communicated during lean production activities	27	4.0	0.9	0.80
Availability of clear worksheets that describe job at every workstation.	27	4.4	0.8	0.87
Worksheets are displayed conspicuously	27	4.5	0.9	0.59
Operators can do suggested changes and improvements to worksheets.	27	4.4	0.8	0.87
Operators are trained in problem solving methods.	27	3.5	1.3	0.60
Solving production problems involve teamwork	27	3.9	1.2	0.60
Operators understand the seven wastes of lean system.	27	3.1	1.0	0.54
There is emphasis on the Kaizen suggestion scheme in lean implementation processes	27	3.3	1.2	0.65
Excellent implementation of lean principles at workplace	27	2.7	1.1	0.60
Availability of periodic training in lean (Kaizen tools) within the organization	27	3.1	1.3	0.66
Generated Cronbach's Alpha Coefficient = 0.93				

From table 6.1, it can be seen that the highest and lowest values in the item total correlation coefficient are 0.87 and 0.36 respectively, while the average inter-item correlation is 0.49. The 'alpha if deleted' (see appendix 4) shows that the lowest and the highest items' total correlation coefficients are within an acceptable range. The value of the Cronbach's alpha coefficient (0.93) also falls within the interval 0 and 1. The 0.93 coefficient signifies an excellent correlation (≥ 0.9 is rated excellent). It can therefore be deduced that there is a strong internal reliability within the grouping of these multi-items; hence, "familiarity with the lean/Kaizen conceptual features" is accepted as the variable to be considered for further analysis in the statistical t-test. The next section deals with the organizational hierarchical awareness of the lean/Kaizen suggestion scheme.

6.2.2 The internal reliability analysis of the items of Organizational hierarchical awareness of the lean/Kaizen suggestion scheme

In this section, the individual item correlation coefficient for the multi-items relating to the organizational hierarchical awareness of the lean/Kaizen suggestion scheme is shown in table 6.2.

Table 6.2   Descriptive statistics and Cronbach's alpha coefficients for the organizational hierarchical awareness of the lean/kaizen suggestion scheme.

Item Statements for Organizational Hierarchical Awareness in Kaizen Suggestion Scheme	N	Mean	Standard Deviation	Item Total Correlation
Top Management	27	3.7	1.1	0.83
Middle Management	27	3.5	1.1	0.83
Shop Floor Workers	27	2.9	1.0	0.69
Generated Cronbach's Alpha Coefficient = 0.89				

Table 6.2 revealed that the item total correlation coefficients for the hierarchical awareness of the top management, middle management, and shop floor workers are 0.83, 0.83 and 0.69 respectively. The average inter-item correlation is 0.74. The 'alpha if deleted' (see appendix 4) shows that the items' total correlation coefficients are strongly correlated and within the acceptable range. The value of the generated Cronbach's alpha coefficient (0.89) also signifies an excellent correlation (≥ 0.8 is rated good). It can therefore be deduced that there is a strong internal reliability within the grouping of these multi-items; hence, "organizational hierarchical awareness in the lean/Kaizen suggestion scheme" is established as an independent variable to be considered for further analysis in the statistical t-test. The next section

deals with the organizational policy for employee participation and involvement in ideas submission processes.

6.2.3 Internal reliability analysis of the items of organizational policy on employee participation and involvement in ideas submission processes

In this section, the individual item correlation coefficient for the multi-items relating to the organizational policy for employee participation and involvement in ideas submission processes is presented as shown in table 6.3.

Table 6.3   Descriptive   statistics   and   Cronbach's   alpha coefficients for the organizational policy for employee participation and involvement in ideas submission processes

Item Statements for Organizational Policy for Employee Participation in Idea submission Processes	N	Mean	Standard Deviation	Item Total Correlation
My company has a policy for employees' participation in decision-making.	27	3.6	1.1	0.45
Employees are encouraged to develop new ideas	27	4.1	0.9	0.52

Goal alignment ensures that all teams and management are focusing on the same goals	27	4.0	1.0	0.59
Workers have a sense of responsibility for the success or failure of company's overall performance	27	4.4	0.8	0.75
Generated Cronbach's Alpha Coefficient = 0.76				

From table 6.3, it can be seen that the items' total correlation coefficients for the existence of an organizational policy for employee's participation and involvement in decision making, employees encouraged to develop new ideas, goal alignment ensures team and management focusing on same goals, and workers sense of responsibility for the success or failure of company's overall performance are 0.45, 0.52, 0.59 and 0.75 respectively. The average inter-item correlation of 0.48 was achieved while the 'alpha if deleted' (see appendix 4) shows that the items' total correlation coefficients are strongly correlated and within acceptable range. The value of the generated Cronbach's alpha coefficient (0.76) also signifies an excellent correlation (≥0.7 is rated acceptable). It can therefore be deduced that there is an acceptable internal reliability within the grouping of this multi-items; hence, "organizational policy for employee participation and involvement in ideas submission processes" is established as an independent variable to be considered for further analysis in the statistical t-test. The next section deals with the implementation of the Kaizen suggestions scheme in the organizations.

6.2.4 Internal reliability analysis of the items of implementation of the Kaizen suggestions scheme in the organizations.

In this section, the individual item correlation coefficients for the multi-items relating to the implementation of the Kaizen suggestions scheme in the organizations are shown in Table 6.4.

Table 6.4   Descriptive Statistics and Cronbach's Alpha Coefficients for the Implementation Of Kaizen Suggestions Scheme In The Organizations

Item Statements for Implementation of Kaizen Suggestions Scheme.	N	Mean	Standard Deviation	Item Total Correlation
Organizational culture is conducive/accommodative to suggestion scheme	27	4.1	0.8	0.55
Relationship of mutual trust between management and workers	27	3.6	0.9	0.60
There exists a suggestion scheme unit/committee for the assessment of the scheme.	27	3.7	1.0	0.69
Workers are motivated about the need for the submission of	27	3.7	1.1	0.60

improvement ideas				
There are accessible, marked and well placed suggestion boxes in the company.	27	3.9	1.1	0.40
There are other means of harvesting suggestions (e.g. online-ideas submission, phone-in, sms, etc.)	27	2.4	1.4	0.30
Staff members are trained in various means of submitting ideas.	27	3.1	1.1	0.65
The assessment of suggested improvement ideas is quick.	27	2.6	1.2	0.49
Management ensures regular feedback of assessed improvement suggestions.	27	2.8	1.2	0.62
The feedback is clear and detailed.	27	2.6	1.1	0.68
New and approved suggested ideas are publicized to the rest of the employees.	27	3.1	1.4	0.87
Management recognises and appreciate suggestions, even when it is not extraordinary	27	3.5	1.2	0.72
Employee participation in ideas/suggestions submission is used as part of staff performance appraisal	27	2.7	1.3	0.51
Management shares business results with workers and show	27	3.1	1.6	0.68

how individuals contribute to them.				
Management provides assurances about job security, if suggestions might lead to job loss.	27	3.4	1.0	0.74
Generated Cronbach's Alpha Coefficient = 0.91				

Table 6.4 revealed that the item total correlation coefficients for the multi-items relating to the implementation of the Kaizen suggestions scheme in the organizations are strongly correlated with the average inter-item correlation of 0.42 and Cronbach's alpha correlation coefficient of 0.91. The 'alpha if deleted' (see appendix 4) shows that the items' total correlation coefficients are closely clustered around the Cronbach's alpha coefficient and within the acceptable range. The value of the generated Cronbach's alpha coefficient (0.91) signifies an excellent correlation and reliability (≥0.9 is rated excellent). It can therefore be inferred that there is a strong internal reliability within the grouping of these multi-items; and that "implementation of the Kaizen suggestions scheme in the organizations" is established as an independent variable to be considered for further analysis in the statistical t-test. The next section deals with the mode of motivation for employee participation and involvement in ideas submission processes. For easy analysis, the item of motivation is classified into two sub-sections; intrinsic and extrinsic rewards in the next section.

6.2.5 The internal reliability analysis of the items of intrinsic rewards for employee participation and involvement in ideas submission processes.

In this section, the individual item correlation coefficient for the multi-items relating to the intrinsic rewards for employee participation in the lean/Kaizen suggestion scheme is shown in Table 6.5.

Table 6.5   Descriptive   statistics   and   Cronbach's   alpha coefficients for intrinsic rewards for employee participation in kaizen suggestions scheme

Item Statements for Intrinsic Rewards for Employee Participation in Kaizen Suggestion Scheme	N	Mean	Standard Deviation	Item Total Correlation
Suggestion of improvement ideas resulted in job satisfaction.	27	3.9	0.7	0.47
Praised when submitted a constructive ideas	27	3.9	0.8	0.47
Generated Cronbach's Alpha Coefficient = 0.63				

Table 6.5 revealed that the item total correlation coefficients for the item of job satisfaction and praises that accrued from the suggestion of improvement ideas are 0.47 for each item. The value of the generated

Cronbach's alpha coefficient (0.92) signifies a significant correlation (≥0.9 is rated excellent). It can therefore be deduced that there is a strong internal reliability within the grouping of these multi-items; hence, "intrinsic rewards for employee participation in the lean/Kaizen suggestion scheme" is established as an independent variable to be considered for further analysis in the statistical t-test. The next section deals with the extrinsic rewards for employee participation and involvement in the lean/Kaizen suggestion scheme.

6.2.6 The internal reliability analysis of the items of extrinsic rewards for employee participation and involvement in ideas submission processes.

In this section, the individual item correlation coefficient for the multi-items relating to the extrinsic rewards for employee participation in the lean/Kaizen suggestion scheme is shown in table 6.6.

Table 6.6   Descriptive   statistics   and   Cronbach's   alpha coefficients for extrinsic rewards for employee participation in kaizen suggestions scheme

Item Statements for Intrinsic Rewards for Employee Participation in Kaizen Suggestion Scheme	N	Mean	Standard Deviation	Item Total Correlation
There exists a reward scheme for suggested ideas in the company	27	3.4	1.5	0.86
Rewards are in cash form	27	3.1	1.5	0.86
Generated Cronbach's Alpha Coefficient = 0.92				

Table 6.6 revealed that the item total correlation coefficients for the item of the existence of a reward scheme and rewards in cash for the suggestion of improvement ideas are 0.86 apiece. The value of the generated Cronbach's alpha coefficient (0.92) signifies a significant correlation (≥ 0.9 is rated excellent). It can therefore be deduced that there is a strong internal reliability within the grouping of these multi-items; hence, "extrinsic rewards for employee participation in the lean/Kaizen suggestion scheme" is established as an independent variable to be considered for further analysis in the statistical t-test. The next section deals with the statistical comparison of selected independent variables in lean/Kaizen suggestion scheme.

6.3 Statistical Comparison of selected independent variables and Organizational size

In the previous section, the researcher was able to perform the required summated scale of the multi-items scales of the dependent variable by using the Cronbach's Alpha Coefficient for internal consistency reliability. The analysis showed a strong correlation and reliability between the dependent variable and the independent variables. The company size for this research is divided into companies with a 0 – 200 employees (small) and those with above 200 employees (large); while the independent variables, from the Cronbach's Alpha analysis in the previous section, are represented thus:

- ➤ L1-Organizational familiarity with lean/Kaizen conceptual features;
- ➤ L2-Organizational Hierarchical awareness of the Kaizen suggestion scheme;
- ➤ L3-Organizational policy for employee participation in idea submission processes;
- ➤ L4-Implementation of the Kaizen suggestion scheme;
- ➤ L5-Intrinsic rewards for employee participation in theKaizen suggestion scheme; and
- ➤ L6-Extrinsic rewards for employee participation in the Kaizen suggestion scheme.

This section delineates the analysis of the comparison between the means of the independent variables with the company size as shown in table 6.7. Table 6.7 indicates the mean scores of the independent variables, as compared to the company size categories.

Table 6.7   Comparison between the independent variables and company size: comparing means

Variable	0-200 Employees (Small)			>200 Employees (Large)			t-test p-value 2 (tailed)	Cohen's d	Ranking of Cohen's d
	N	Mean	Standard Deviation	N	Mean	Standard Deviation			
L1	17	3.54	0.81	10	3.99	0.48	0.1268	0.63	M
L2	17	3.14	1.03	10	3.77	0.83	0.1132	0.65	M
L3	17	3.93	0.87	10	4.20	0.51	0.3772	0.36	S
L4	17	2.96	0.76	10	3.71	0.59	0.0121*	1.08	L
L5	17	3.94	0.68	10	3.90	0.61	0.8766	0.06	S
L6	17	2.74	1.30	10	4.15	1.25	0.0104*	1.10	L
Statistically significant at 5% level (p < 0.05) *L = Large; M = Medium; S = Small*									

From table 6.7 it can be seen that the variable 'Organizational familiarity with the lean/Kaizen conceptual features' obtained mean scores of 3.54 and 3.99 from organizations employing between 0-200 employees and those with above 200 employees respectively. Although, this difference is not statistically significant (p > 0.05), the effect size measure (Cohen's d = 0.63) indicates that the difference is still of practical significance since the ranking is a medium Cohen's d. The p-value of 0.1264 showed that there is a strong congruence with the variable by the respondents from small and large organizations. There is no statistically significant difference at p < 0.05. It can be deduced therefore that the respondents from the small and large companies concurred that their companies are

familiar with the lean/Kaizen conceptual features in manufacturing processes.

Another deduction from table 6.7 is that the variable 'Organizational hierarchical awareness of the Kaizen suggestion scheme' achieved high mean scores (3.77), as rated by the respondents from organizations employing more than 200 employees and a score mean of (3.14) from respondents from companies employing between 0-200 employees. It can be seen that this difference is not statistically significant ($p > 0.05$), the effect size measure (Cohen's d = 0.65) indicates that the difference portrays practical significance since the ranking still falls within a medium Cohen's d. The p-value (0.1132) and the medium rating for the effect size indicate no statistically significant difference, at $p < 0.05$, between the respondents from small and large companies respectively. Therefore, it may be inferred that respondents from both small and large companies concurred that there is hierarchical awareness of the Kaizen suggestions scheme in their automotive components manufacturing companies in the Eastern Cape.

The high means scores (3.93 and 4.20) for both small and large organizations showed a large difference. Even though, this difference is not statistically significant ($p > 0.05$), the effect size measure (Cohen's d = 0.36) indicates that the difference is still practically significant. The Cohen's d is ranked small with a relatively high congruence and relationship strength. It can be concluded that the respondents from both small and large companies concurred with the existence of an organizational policy for employee participation in idea submission processes in their organizations. The evidence here is that there is no statistically significant difference, ($p = 0.3772$), with regards to the variable.

Furthermore, table 6.7 shows that the variable 'Implementation of the Kaizen suggestion scheme' obtained mean scores of 2.96 and 3.71 from organizations employing between 0-200 employees and those with above 200 employees respectively. The difference in the means is significantly large though the effect size measure for the Cohen's d is 0.47 a piece; however, the p-value of 0.0121 indicates a statistical significance at the 5% level. This shows that there is an inconsistency in the submissions of the respondents from both types of organizations (small and large) and there is a statistically significant difference at $p < 0.05$. It can be deduced therefore that the respondents from the small and large companies do not concur that their companies have a proper implementation of the Kaizen suggestion scheme.

The analysis of the variable 'Intrinsic rewards for employee participation in the Kaizen suggestion scheme' shows a strong agreement, with the scored means of 3.94 and 3.90, amongst the respondents from organizations employing between 0-200 employees and those with above 200 employees respectively. This difference in means is relatively small with a statistically significant difference (0.04). The small effect size of the strength of the relationships (Cohen's d = 0.06) in the analysis, coupled with a p-value of 0.8766, indicates no statistically significant difference at $p < 0.05$. It can be inferred therefore that the respondents from the small and large firms agreed that the automotive companies adopt an intrinsic reward system in motivating the suggestion scheme in their organizations.

A further comparison with respect to the extrinsic rewards showed that the respondents from the small and large companies contrasted greatly (means = 2.74; standard deviation =1.30 for small companies and mean = 4.15; standard deviation = 1.25 for large companies). This difference is statistically large and not significant. Although they obtained a

Cohen's d coefficient of 0.86 apiece, the t-test with a p-value of 0.0104 (rated large) at the significant level $p > 0.05$ proved that there is a statistically significant difference at the 5% level. This indicates a high disparity amongst the respondents with regard to the practice of an extrinsic reward system in motivating the suggestion scheme in the organization.

6.4 Summary of Findings

This research has established a basic level of awareness and understanding among employees/employers relations that the Kaizen suggestion scheme is a vital tool for delivering strategic objectives in the management of decision making and organizational growth. However, the level of perception and awareness of Kaizen suggestions scheme in major automotive components companies in the Eastern Cape Province generally seems to be inadequate. The field studies conducted showed apparent lack of a systematic mechanism for the practice and administration of the Kaizen suggestion tools in most Eastern Cape automotive companies in terms of training, extrinsic motivation, proper implementation and evaluation. The implementation/performance evaluation constructs and related concepts are not well established in the case organisations. Thus, the standard of approaches and evaluation to employees' suggestion scheme is below best practice level and performance criteria. These demerits are found to corroborate the outcome of the interviews and discussions that were conducted for some selected respondents (see interview procedure in appendix 6).

The participants' comments and responses indicate concerns regarding the following ideas suggestion scheme and performance evaluation issues:

- Inadequate dedicated personnel to handle lean change;

- Lack of periodic training of staff in Kaizen/Lean principles;
- Lack of a clear or systematic mechanism for the assessment of suggested ideas;
- Poor motivational rewards for participation in Kaizen suggestion scheme; and
- Lack of proper and regular feedback of assessed/evaluated suggestions;

However, during the field investigations and interviews, the researcher observed that some of the employees were willing to work within the scope of standard Kaizen suggestion scheme and its performance evaluations tools but they need to be encouraged and accepted by top level management.

6.5   Concluding Remarks

The purpose of this chapter was to analyse and interpret the data obtained from the empirical study, pertaining to the dependent variables of organizational familiarity with the lean/Kaizen conceptual features; the organizational hierarchical awareness of the Kaizen suggestion scheme; the implementation of the Kaizen suggestion scheme, and intrinsic and extrinsic rewards for employee participation in the Kaizen suggestion scheme. Empirical results were used quantitatively to gauge support from respondents for the dependent variables and their strengths, assessing whether variables should be accepted or not.

The quantitative statistical results generally indicated a strong support for the dependent variables. Although, the comparison of means indicated some variance between the organizations sizes, the mode of implementation of the suggestion scheme and the extrinsic reward system in motivating suggestion scheme in the organizations.

Chapter seven offers a summary of the significant findings and highlights the conclusions and recommendations from this study based on the research results discussed in chapters five and six.

Chapter 7: SUMMARY, RECOMMENDATIONS AND CONCLUSION

7.1 Introduction

In pursuance of the aim and objectives of the research, a mixed method strategy was adopted, using the case organisations within which the practice of the lean and Kaizen suggestion scheme would take place. The case studies in the research presented a reasonable unit of analysis of the Kaizen suggestion tool in South African lean automotive component firms at a quantitative level. Interviews/discussions (qualitative or subjective tool) were used to generate supportive opinion from the target population. This was followed by a quantitative method of data production comprising of the design, pre-test and administration of structured questionnaires in all the twenty seven organizations studied.

The purpose of the final chapter is to reflect on the research undertakings and summarise what has been accomplished by the research project by closing the links between the main problem, sub-problems and the findings. Besides highlighting the main findings, This chapter will describe the problems that were encountered in the research process and the limitations of the study. Finally the recommendations for further research are outlined and suggestions for the application of the findings will be presented.

7.2 Problems and the limitations of the study

No major problems were experienced in conducting the study. However, minor problems relating to the collection of data were encountered. The problems encountered are:

- There was a lack of cooperation and lethargy from some of the respondents with the questionnaire survey and this impeded the response rate and the prompt collection of the questionnaires. The researcher anticipated this challenge and, with adequate planning, resolved this issue. Follow-up telephone calls, e-mails and personal visits to target companies were used to encourage and improve the response rate. The high response rate that was attained and the number of respondents who indicated that they would like to receive a synopsis of the results demonstrated that the survey was positively received by the organizations

- A further problem was the misinterpretation of instructions and the failure of respondents to read the instructions. Some respondents believed they had to evaluate their own organizations against the variables contained in the questionnaire. Telephone calls and e-mails, explaining that the variables were not meant to be critical of organizational rating and therefore should be evaluated for their propensity to encourage participation and engagement of employees, resolved this issue.

The first limitation of this study relates to the nature of the topic and the strategic responses required. Obtaining candid responses on sensitive information such as employees' participation and involvement in the suggestion scheme in automotive components industry was not easy. To minimise this influence, indirect questioning was adopted during the interviews and questionnaire design. Another limitation in this respect is the problem of case study research on its own. Although qualitative research involves studying the respondents in their natural setting, no research can truly capture the full effect of the setting or the respondents because they are complex entities (Gay and Airasian, 2003:19). Respondents may not provide the researcher with a true reflection of events because of a lack of understanding or time

constraints. These issues are problematic and may not have allowed the free flow of information.

Again, during the research, the respondents were informed about the research and assured of anonymity and confidentiality. This, according to Gray and Airasian (2003:19) are regarded as a limitation because the researcher, being involved with human beings will have to consider numerous ethical concerns and responsibilities to the respondents. It is difficult therefore to assess the extent to which these assurances allayed the fears of the respondents in the study. Furthermore, the respondents, particularly the line operators and supervisors, may have conceived the research as a means of showcasing their displeasure with management and the rewards system in their organizations. There is, therefore, the likelihood that the level of the employee suggestion scheme evaluation and practices in the study were affected by these issues.

7.3   Summary of the study

In this section, the main problem and sub-problems are repeated to indicate which actions were taken to address problems. The main findings related to the sub-problem are briefly reiterated.

The main problem identified in this study was:

How can South African manufacturers of automotive components organizations achieve world-class levels of employee participation in the submission of suggestions for continuous improvement?

This study was undertaken because organizations are continuously exploring ways to improve their competitive advantage in order to ensure their survival in the global market. Many authors have stressed

the pivotal roles that empowered and engaged employees play in securing a competitive edge for organizations. The research findings of Ray (2003), Brewster et al. (2003), Kiger (2002) and Poisat (2005) confirmed that improved business performance hinges not only on improved processes, technology and products but also equally on the involvement and participations of employees in constructive ideas suggestions. Slack et al (2001:612) and Poisat (2005:3) believe that many South African automotive component industries performed restructuring exercises and adopted lean manufacturing techniques in order to improve their manufacturing efficiencies and overall organizational performance through the better use of their organization's resources. The implementation of these principles and techniques, however, are devoid of world-class continuous improvement, employee empowerment and involvement in the submission of creative ideas. This understanding prompted a study into of the roles of employee involvement in the Kaizen suggestion scheme in South African automotive components companies, within the South African context.

In order to resolve the main problem, sub-problems were developed and discussed in various chapters of the study. These sub-problems and a brief discussion thereof are provided below.

- ➤ **Sub-Problem one:** What are the current levels of the submission of employee suggestions in South African automotive component industries?
- ➤ **Sub-Problem two:** To what extent are these suggestions implemented?
- ➤ `**Sub-Problem three:** What current mechanisms do South African automotive components suppliers use in encouraging the submission and implementation of employee suggestions?

- ➢ **Sub-Problem four:** What are the barriers to the submission and implementation of employee suggestions and contribution within the South African automotive industry?
- ➢ **Sub-Problem five:** What best practices or techniques can the South African automotive components manufacturers use to encourage employee suggestions and how can they be implemented?

To address the above research problems, a comprehensive literature study was conducted to determine the various thoughts and postulations that delineate issues relating to employee empowerment and participation in suggestions systems. Significant attention was accorded to the bearings of the suggestion system in world-class manufacturing paradigm, lean systems of production and the Kaizen (continuous improvement) concept. Various lean/Kaizen tools were considered while a standard employee suggestion system flow chart and evaluation were delineated.

Chapter three of the study described various drivers of employee participation and empowerment. Several strategies and constructs, for incorporating employee participation and engagement as a means of achieving business success and a competitive advantage, were presented. Amongst the strategies discussed was the role of commitment, organizational citizenship behaviour, and motivation. Issues' relating to the psychological empowerment of employees, using Maslow's hierarchical of needs, Alderfer's ERG theory, Hertzberg's two-factor theory, McClelland's need for achievement and Douglas McGregor's theories were described. Job performance and the Porter-Lawler models were delineated in conjunction with the synopsis of motivational approaches.

Principles and Strategies identified in chapters two and three were juxtaposed with the sub-problems of the study to arrive at the content of the research questionnaire. The questionnaire, used to survey the Kaizen suggestion systems, was developed and administered to the thirty three (33) automotive components organizations in the Eastern Cape.

In order to solve the stated sub-problems, the results of the empirical study were analysed and reviewed to determine the level of congruence among respondents and the variables mentioned in the constructs and drivers of employee involvement and empowerment in ideas suggestion systems. The analysis of the results revealed that there was a trend of agreement/strong agreement with the variables organizational familiarity with the lean/Kaizen conceptual features, policy and hierarchical awareness of idea submission systems, implementations and mode of intrinsic reward for participation in suggestion processes. Therefore there was no statistical justification to remove any of these variables. However, there were variances in the implementation of suggestion and the extrinsic reward systems. The analysis indicated notable variances in the areas of training and evaluation of suggested ideas. These areas, in the South African context, require more attention.

7.4 Recommendations

In order to complete the study, it is required that recommendations for the application of the research be offered, and suggestions for further study in those areas that are equivalent to the research problem, be presented.

The objective of this study was to make a strategic contribution that will incorporate world-class organizational involvement of employees in the ideas suggestion systems in the South African automotive components'

industry. Based on the results of this study, the following recommendations are made as an effective means of enhancing the role of the Kaizen suggestion tool in the South African automotive companies in the Eastern Cape.

7.4.1 Recommendations for Automotive Components Manufacturers

➢ Organizational attainment of a competitive advantage, in the highly competitive global market, requires substantial attention. Organizations desiring to operate within the ambient of world-class continuous improvement strategy need, therefore, to adopt the lean/Kaizen principles of production and the ideas suggestions systems. The automotive companies are encouraged to pursue an awareness of and the up-to-date adoption of lean tools by enlightening the organizational echelon (from top management to the shop-floor staff) of the importance of the lean production system and its role in supporting the core business of the organization

➢ The automotive components organizations should establish clear Kaizen suggestion objectives and communicate these to the workers and various departments or parties involved in production and service delivery. The objectives are necessary as a benchmark for all organizational activities

➢ Well qualified and experienced Kaizen suggestion assessors/evaluators should be appointed to prepare evaluation plans, feedback/relay of assessments and administration of rewards for the organizations. The performance evaluation professionals should also help in drawing a sound performance evaluation policy and ensuring that funds are available for evaluation and reward exercises

- A flexible organisational structure that encourages a favourable employee/employers relation and organizational citizenship should be put in place within the organizations
- A dedicated unit/department, with sole responsibility of bolstering awareness for participation in ideas suggestion, collation of ideas through suggestions' forms, electronic mails, Multimedia messaging and Short Message services (MMS and SMS), should be prioritized within the automotive companies in the E.C
- An effective and well-coordinated feedback mechanism should be put in place for workers to be abreast of the evaluation and implementation of suggested ideas
- Constant training and development of staff on ideas development and submission techniques should be pursued by the firms
- Within the South African context, organizations should pay as much as they can afford even if it is more than what other companies pay for similar work. This form of extrinsic reward can motivate more commitment and participation in organizational profitability
- Organizations should offer as many benefits as they can afford,, even if it is more than what other companies offer for similar work. This intrinsic reward can also motivate job satisfaction and organizational citizenship
- Companies should insist that employees, at all levels, share in the achievement of the business. Business results and how individuals contribute to achievement should be shared with all cadre of employees
- Every effort should be directed towards encouraging management to show a sincere interest in their employees' well-being.

7.4.2 Recommendations for Industrial Policy Makers

➢ The South African government and the Regional Chamber of Commerce should strengthen the automotive operational policy and guidelines so that the company managements are mandated to adopt appropriate continuous improvement strategies and motivational policy that encourage best practices and performance evaluations.

7.4.3 Recommendations for Researchers/Academics

➢ More research should be conducted in the area of Kaizen suggestions systems. Other research opportunities are recommended in the next section as areas for further research
➢ Educational institutions, such as universities, should be ideally positioned to provide assessment services to organizations in the Kaizen suggestion scheme.

7.5   Areas for further research

The following recommendations for further research are essentially driven by the findings of this research on employee participation in suggestion systems**.**

➢ The limitations discussed in section 7.2 of this study could be overcome by conducting further research into the Kaizen suggestion tool in South African automotive components companies in other provinces of South Africa. Analysing the gaps between the results of such research efforts and those presented in this study could provide an important feedback to automotive components organizations and other related service providers.

➤ There is a need to determine more suggestion scheme evaluation measures or indicators relating to other functional departments and service delivery sectors as there seem to be opportunities for such explorations beyond the case organisations studied.

➤ The case studies in this research were automotive components manufacturers and so there is need for research into the application of the concept in automotive companies to increase the generalizability of the findings.

➤ There is a need to determine the cost-benefit analysis of implementing Kaizen suggestion systems in automotive components companies, so as to establish the extent of the value added and cost implications of the practice.

➤ The key issues identified in this research need to be explored further. For example, the irregular assessment of the suggestion systems and the lack of skilled personnel in the evaluation process make the effective implementation of the tool daunting. Again, a study exploring the contribution of Kaizen suggestion systems to organizational effectiveness and profitability is recommended.

7.6   Concluding remarks

There is decisive evidence of the significant contribution that participating and engaged employees make, through the suggestion of constructive ideas towards an organizations' competitive advantage. This feat is achievable when there is favourable organizational context, an all-inclusive suggestion policy, evaluation and motivation/rewards. It is concluded that South African automotive organizations have not realized this fact, and need to be more proactive in implementing employee participation in suggestion systems and strategies.

7.6.1 Contribution to knowledge

The key contributions of this research to the body of knowledge include:

➢ The research has developed a clear theoretical understanding of basic constructs and related concepts of the role of the Kaizen suggestion tool, as it relates to employee participation and involvement in ideas suggestions in the South African lean automotive components companies in the Eastern Cape.

➢ The research has developed a bespoke methodology to achieve its objective of evaluating the performance of suggestion systems in automotive components firms.

➢ The research has generated a quantitative assessment of employee participation in the suggestion scheme within the automotive components companies of the Eastern Cape in South Africa.

➢ The research has identified employee participation in ideas suggestion systems as a missing link in organizational continuous improvement processes; a void that has hitherto created gaps between management and line staff.

➢ The research has provided an understanding of the barriers and challenges of suggestion system evaluation practices within the automotive components companies in the Eastern Cape in South Africa.

The assumption in this thesis is that Kaizen suggestion systems, by definition, help to improve organisational effectiveness and performance. The researcher therefore believes that a research into the key ideas underlying suggestions submission, processing, evaluation and rewards may open a window of opportunity for achieving higher

efficiency and effectiveness in the management of organization processes.

7.6.2 Caution

The recommendations in this study should be adopted with caution as the findings, at this stage, are only propositions based on a small sample frame. This is further explained by the methodology and exploratory nature of the research.

This chapter has provided the summary and recommendations for this research. The next section looks at the references used in the research as well as the appendices of documentation used in the conduct of the research.

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Appendix 1

(Covering Letter)

Nelson Mandela Metropolitan University

for tomorrow

1st June 2011

…………………………………

…………………………………

Dear Sir/Madame,

SURVEY: ENHANCING THE ROLE OF THE KAIZEN SUGGESTION TOOL IN
SOUTH AFRICAN   LEAN AUTOMOTIVE COMPANIES OF THE EASTERN CAPE

I would like to invite you to participate in a survey aimed at enhancing the role of Kaizen Suggestion Tool in the lean automotive companies of the Eastern Cape. The results of this research will be of a great value to the automotive industry and will be submitted to the Nelson Mandela Metropolitan University (NMMU) in partial fulfillment of the requirements for the degree of Doctor Technologiae in Operations Management.

The objective of this questionnaire is to determine your perceptions, with respect to the involvement and engagement of employees in the Kaizen decision making and suggestions scheme in the automotive industry. Your assistance in this regard will be highly appreciated.

Please complete the following questionnaire to the best of your ability and return it by 20th of June 2011 to:

.

Prof. Koot Pieterse

(World Class Production and Lean Practitioner)

Nelson Mandela Metropolitan University (Business School)

20 Bird Street Central, Port Elizabeth; 6001.   E-mail: lean@nmmu.ac.za

Tel: +27(0)41 504 3774

Should you require any additional information, please feel free to contact

Mr. ADEDEJI, A. Charles

PhD (Operations Management) Candidate

+27736172733 or E-mail: charlie2004ade@yahoo.co.uk

All the respondents and responses will be treated with strict confidentiality

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Appendix 2

SURVEY QUESTIONNAIRE

Please answer the following questions by marking the appropriate block with an "X"

SECTION A: BIOGRAPHICAL INFORMATION

1. What is your position in this organization?

Casual Worker	☐	Supervisor/Group Leader	☐
Line Staff	☐	Operations Manager	☐
Chief Executive	☐		

2. What is the total number of employees in this organization?

0 – 100	☐	301 - 400	☐
101-200	☐	401 – 500	☐
201-300	☐	Above 500	☐

SECTION B: EMPLOYEE'S FAMILIARITY WITH KAIZEN CONCEPT IN LEAN PRINCIPLES

Please answer the following questions by marking the appropriate block with an "X"

3. Has your company started implementing lean principles (Kaizen, etc)?

YES ☐   NO ☐

4. If yes, how long?

0 – 1 year ☐   2 – 5 years ☐   6 years and above ☐

5. On a scale of 1 (STRONGLY DISAGREE) to 5 (STRONGLY AGREE), rate the employee's familiarity with Kaizen concept in lean in your organization.

	FACTORS	STRONGLY DISAGREE	DISAGREE	UNCERTAIN	AGREE	STRONGLY AGREE
	LEAN/KAIZEN CONCEPT CONCEPTUAL FEATURES	1	2	3	4	5
5.1	The organization has dedicated staff to handle the lean change					
5.2	Management motivated lean understanding and benefits					
5.3	Staff understanding and appreciation of lean benefits					
5.4	Dedicated staff member or unit to					

	promote lean principles					
5.5	Adoption of teamwork policy in the organization					
5.6	Teams' leaders motivate, assist and are capable of handling the organization of work					
5.7	Teams' leaders are able to interpret and coordinate drawn value stream mapping for production processes					
5.8	Potential problems are identified, corrected and communicated during lean production activities					
5.9	Availability of clear worksheets that describe job at every workstation.					
5.10	Worksheets are displayed conspicuously					
5.11	Operators can do suggested changes and improvements to worksheets.					
5.12	Operators are trained in problem solving methods.					
5.13	Solving production problems involve teamwork					
5.14	Operators understand the seven wastes of lean system.					
5.15	There is emphasis on the Kaizen suggestion scheme in lean implementation processes					
5.16	Excellent implementation of lean principles at workplace					
5.17	Availability of periodic training in lean (Kaizen tools) within the organization					
5.18	How often is the lean in-house/external training for staff in your organization? Weekly ☐ Monthly ☐ Once a year ☐ Twice a year ☐ Irregularly ☐ Not at all ☐					

6. Indicate the barriers you have experienced against the development of staff for the implementation of suggestion scheme

•	Lean/Kaizen trainers are not adequately equipped for the job	YES	NO
•	The lean trainers are not qualified to handle the training	YES	NO
•	Tight production schedules do not allow for training programmes.	YES	NO
•	Training in lean(Kaizen) is viewed as an expensive venture by the management	YES	NO
•	Staff are not given sufficient preliminary preparations towards training	YES	NO
•	In-sufficient opportunity for team-solving of problems (on-the-job-learning) during the week.	YES	NO
Give other reasons for inadequate training in your organization………………………………………………………… ………..			

7. On a scale of 1 (STRONGLY DISAGREE) to 5 (STRONGLY AGREE), rate the extent of support and awareness for the Kaizen suggestion scheme program across the Top Management; Middle Management and the shop Floor workers in your organization.

	FACTORS	STRONGLY DISAGREE	DIS-AGREE	UNCERTAIN	AGREE	STRONGLY AGREE
	HIERARCHICAL AWARENESS OF KAIZEN SUGGESTION SCHEME	1	2	3	4	5
7.1	The Top Management are fully aware and committed to Kaizen Suggestion practice and its success in the organization					
7.2	The Middle Management are fully aware and committed to Kaizen Suggestion practice and its success in the organization					
7.3	The Shop Floor workers are fully aware and committed to Kaizen Suggestion practice and its success in the organization					

SECTION C: EMPLOYEES' PARTICIPATION AND INVOLVEMENT IN CONTINUOUS IMPROVEMENT STRATEGY

8. On a scale of 1 (STRONGLY DISAGREE) to 5 (STRONGLY AGREE), rate the employee's participation and involvement in improvement in your organization.

	FACTORS	STRONGLY DISAGREE	DIS-AGREE	UNCERTAIN	AGREE	STRONGLY AGREE
	ORGANIZATIONAL POLICY	1	2	3	4	5
8.1	My company has a policy for employees' participation in decision-making.					
8.2	Employees are encouraged to develop new ideas					
8.3	Goal alignment ensures that all teams and management are focusing on the same goals					
8.4	Workers have a sense of responsibility for the success or failure of company's overall performance					
	• Please state other reasons that are responsible for non-participation in the idea suggestion processes …….. …….. ……..					

SECTION D: IMPLEMENTATION OF SUGGESTION SCHEME

9. On a scale of 1 (STRONGLY DISAGREE) to 5 (STRONGLY AGREE), rate your organization with respect to Suggestion Scheme and employees' involvement factors.

IMPLEMENTATION OF SUGGESTION SCHEME		STRONGLY DISAGREE	DIS-AGREE	UNCERTAIN	AGREE	STRONGLY AGREE
		1	2	3	4	5
9.1	Organizational culture is conducive/accommodative to suggestion scheme					
9.2	Relationship of mutual trust between management and workers					
9.3	There is exist a suggestion scheme unit/committee for the assessment of the scheme					
9.4	Workers are motivated about the need for the submission of improvement ideas					
9.5	There are accessible, clearly marked and well placed suggestion boxes in the company					
9.6	There are other means of harvesting suggestions(online idea submission, phone-in/short message service, etc)					
9.7	Staff members are trained in the various means of submitting ideas					
9.8	The assessment of suggested improvement ideas is quick					
9.9	The management ensures regular feedback of assessed/evaluated suggestions					
9.10	The feedback is clear and detailed					
9.11	New and approved suggested ideas are publicized to the rest of the employees					
9.12	The management recognizes and appreciate suggested ideas, even when such is not extraordinary					
9.13	Employee participation in idea submission is used as part of staff performance appraisal					
9.14	Management shares business results with employees and shows how individuals contribute to them					
9.15	Management provides assurances about job security, if suggestions might lead to job loss					
	• How is the suggestion scheme processes maintained and kept alive in your company?					

SECTION E: EVALUATION OF SUBMITTED SUGGESTIONS

10. Please answer the following questions, with respect to the evaluation of suggested ideas in your Company, by marking the appropriate block with an "X"

10.1 How often are employees' suggestions assessed by the dedicated unit/committee?	
Daily ☐ Once a Week ☐ Once a Month ☐ Bi-annual ☐ Once a Year ☐	
10.2 What is the estimated average number of suggestions per employee submitted in a year?	
None ☐ 1 – 5 ☐ >5 (greater than) ☐	
10.3 What is the estimated percentage of suggestions implemented?	
<10% ☐ 10-50% ☐ >50-80 ☐ >80 ☐	

SECTION F: REWARD STRATEGY FOR IMPROVEMENT IDEAS SUGGESTION

11. On a scale of 1 (STRONGLY DISAGREE) to 5 (STRONGLY AGREE), rate your organization with respect to Suggestion Scheme and employees' involvement factors.

	FACTORS	STRONGLY DISAGREE	DIS-AGREE	UNCERTAIN	AGREE	STRONGLY AGREE
		1	2	3	4	5
11.1	Participation in suggestion of improvement ideas has resulted in more job satisfaction					
11.2	I am praised when I submit a constructive idea					
11.3	There exists a reward scheme for suggestions in the organization					
11.4	Rewards are in cash form					
11.5	Please give a brief description of any other form of reward scheme adopted in your company 1. 2. 3.					

Please record your details below to facilitate contacting you. Do note that the data provided in this questionnaire will be treated with the strictest confidence.

ORGANIZATION……………………………………………………………………………..

ADDRESS………………………………………………………………………………………….

CONTACT PERSON……………………………………………………………………………….

PHONE. …………………….   FAX…………………………. E-MAIL…………………………

Thank you for contributing to the efforts towards improving the automobile components organizations in South Africa.

Appendix 3

DESCRIPTIVE STATISTICS FOR MEAN AND STANDARD
DEVIATION

Source: computer database software packages (Excel Spreadsheet
and Statistica; Version 9.0)

Descriptive Statistics

	Valid N	Mean	Minimum	Maximum	Std.Dev.
B5_1	27	3.3	1	5	1.2
B5_2	27	3.8	1	5	1.1
B5_3	27	4.3	1	5	0.8
B5_4	27	3.1	1	5	1.5
B5_5	27	4.6	1	5	0.9
B5_6	27	3.9	1	5	0.9
B5_7	27	3.2	1	5	1.0
B5_8	27	4.0	1	5	0.9
B5_9	27	4.4	1	5	0.8
B5_10	27	4.5	1	5	0.9
B5_11	27	4.4	1	5	0.8
B5_12	27	3.5	1	5	1.3
B5_13	27	3.9	1	5	1.2
B5_14	27	3.1	1	4	1.0
B5_15	27	3.3	1	5	1.2
B5_16	27	2.7	1	5	1.1
B5_17	27	3.1	1	5	1.3

Descriptive Statistics

	Valid N	Mean	Minimum	Maximum	Std.Dev.

	Valid N	Mean	Minimum	Maximum	Std.Dev.
B7_1	27	3.7	1	5	1.1
B7_2	27	3.5	1	5	1.1
B7_3	27	2.9	1	5	1.0

Descriptive Statistics

	Valid N	Mean	Minimum	Maximum	Std.Dev.
C8_1	27	3.6	1	5	1.1
C8_2	27	4.1	1	5	0.9
C8_3	27	4.0	1	5	1.0
C8_4	27	4.4	1	5	0.8
C8_5	27	3.5	1	5	1.3

Descriptive Statistics

	Valid N	Mean	Minimum	Maximum	Std.Dev.
D9_1	27	4.1	2	5	0.8
D9_2	27	3.6	2	5	0.9
D9_3	27	3.7	2	5	1.0
D9_4	27	3.7	1	5	1.1
D9_5	27	3.9	1	5	1.1
D9_6	27	2.4	1	5	1.4
D9_7	27	3.1	2	5	1.1
D9_8	27	2.6	1	5	1.2
D9_9	27	2.8	1	5	1.2
D9_10	27	2.6	1	5	1.1

D9_11	27	3.1	1	5	1.4
D9_12	27	3.5	1	5	1.2
D9_13	27	2.7	1	5	1.3
D9_14	27	3.1	1	5	1.6
D9_15	27	3.4	2	5	1.0

Descriptive Statistics

	Valid N	Mean	Minimum	Maximum	Std.Dev.
F11_1	27	3.9	2	5	0.7
F11_2	27	3.9	2	5	0.8
F11_3	27	3.4	1	5	1.5
F11_4	27	3.1	1	5	1.5

Descriptive Statistics

	Valid N	Mean	Minimum	Maximum	Std.Dev.
C8_1	27	3.6	1	5	1.1
C8_2	27	4.1	1	5	0.9
C8_3	27	4.0	1	5	1.0
C8_4	27	4.4	1	5	0.8
C8_5	27	3.5	1	5	1.3

Descriptive Statistics

	Valid N	Mean	Minimum	Maximum	Std.Dev.
D9_1	27	4.1	2	5	0.8
D9_2	27	3.6	2	5	0.9
D9_3	27	3.7	2	5	1.0
D9_4	27	3.7	1	5	1.1
D9_5	27	3.9	1	5	1.1
D9_6	27	2.4	1	5	1.4
D9_7	27	3.1	2	5	1.1
D9_8	27	2.6	1	5	1.2
D9_9	27	2.8	1	5	1.2
D9_10	27	2.6	1	5	1.1
D9_11	27	3.1	1	5	1.4
D9_12	27	3.5	1	5	1.2
D9_13	27	2.7	1	5	1.3
D9_14	27	3.1	1	5	1.6
D9_15	27	3.4	2	5	1.0

Descriptive Statistics

	Valid N	Mean	Minimum	Maximum	Std.Dev.
F11_1	27	3.9	2	5	0.7
F11_2	27	3.9	2	5	0.8
F11_3	27	3.4	1	5	1.5
F11_4	27	3.1	1	5	1.5

Appendix 4

DESCRIPTIVE STATISTICS FOR MEAN, STANDARD DEVIATION, CRONBACH'S ALPHA
COEFFICIENTS FOR T-TEST (2-TAILED)

Source: computer database software packages (Excel Spreadsheet and
Statistica; Version 9.0)

Average inter-item corr.: 0.49

	Itm-Totl Correl.	Alpha if deleted
B5_1	0.53	0.93
B5_2	0.82	0.92
B5_3	0.85	0.92
B5_4	0.36	0.93
B5_5	0.67	0.92
B5_6	0.69	0.92
B5_7	0.46	0.93
B5_8	0.80	0.92
B5_9	0.87	0.92
B5_10	0.59	0.92
B5_11	0.87	0.92
B5_12	0.60	0.92
B5_13	0.60	0.92
B5_14	0.54	0.92
B5_15	0.65	0.92
B5_16	0.60	0.92
B5_17	0.66	0.92

Cronbach alpha: 0.93

Average inter-item corr.: 0.48

	Itm-Totl Correl.	Alpha if deleted
C8_1	0.45	0.78
C8_2	0.52	0.73
C8_3	0.59	0.69
C8_4	0.75	0.63

Cronbach alpha: 0.76

Average inter-item corr.: 0.74

	Itm-Totl Correl.	Alpha if deleted
B7_1	0.83	0.79
B7_2	0.83	0.80
B7_3	0.69	0.91

Cronbach alpha: 0.89

Average inter-item corr.: 0.42

	Itm-Totl Correl.	Alpha if deleted
D9_1	0.55	0.90
D9_2	0.60	0.90
D9_3	0.69	0.90
D9_4	0.60	0.90
D9_5	0.40	0.91

D9_6	0.30	0.91
D9_7	0.65	0.90
D9_8	0.49	0.90
D9_9	0.62	0.90
D9_10	0.68	0.90
D9_11	0.87	0.89
D9_12	0.72	0.90
D9_13	0.51	0.90
D9_14	0.68	0.90
D9_15	0.74	0.90
Cronbach alpha: 0.91		

Average inter-item corr.: 0.23

	Itm-Totl Correl.	**Alpha if deleted**
F11_1	-0.04	0.63
F11_2	0.10	0.58
F11_3	0.71	0.00
F11_4	0.53	0.19

Cronbach alpha: 0.52

Correlations

	F11_3	F11_4
F11_3	1.00	0.86
F11_4	0.86	1.00

Cronbach alpha: 0.92

Correlations

	F11_1	F11_2
F11_1	1.00	0.47
F11_2	0.47	1.00

Cronbach alpha: 0.63

Appendix 5

DESCRIPTIVE STATISTICS FOR MEAN, STANDARD DEVIATION, P-VALUE FOR T-TEST (2-TAILED) OF GROUPED VARIABLES AGAINST ORGANIZATION SIZE

Source: computer database software packages (Excel Spreadsheet and Statistica; Version 9.0)

T-tests; Grouping: Size

	Mean Small	Mean Large	t-value	df	p
Conceptual features	3.54	3.99	-1.579	25	0.1268
Hierarchical awareness	3.14	3.77	-1.642	25	0.1132
Lean Policy	3.93	4.20	-0.899	25	0.3772
Suggestion proc.	2.96	3.71	-2.705	25	0.0121
Intr. reward	3.94	3.90	0.157	25	0.8766
Extr. reward	2.74	4.15	-2.769	25	0.0104

Red indicates significant at 5% level (p<0.05)

	Valid N Small	Valid N Large	Std.Dev. Small	Std.Dev. Large	Cohen's d	
Conceptual features	17	10	0.81	0.48	0.63	Medium
Hierarchical awareness	17	10	1.03	0.83	0.65	Medium
Lean Policy	17	10	0.87	0.51	0.36	Medium
Suggestion proc.	17	10	0.76	0.59	1.08	Large
Intr. reward	17	10	0.68	0.61	0.06	Small
Extr. reward	17	10	1.30	1.25	1.10	Large

Red indicates significant at 5% level (p<0.05)

Appendix 6

Interview Guide

Contact person...

Organization..

Phone No...

To whom it may concern

Sir/madam

My name is Adedeji, Adeyemi Charles, a PhD research candidate at Nelson Mandela Metropolitan University, Port Elizabeth, South Africa. I am conducting a survey on "Enhancing the Role of the Kaizen Suggestion tool in South African Lean Automotive Companies of the Eastern Cape" The purpose of this interview is to obtain your opinion and experience on the extent of adoption, implementation and performance of Kaizen Suggestion scheme in the automotive Companies of the Eastern Cape. The interview is estimated to last between 15 and 30 minutes. Let me assure you that the data obtained through this interview and any documentation from you will be treated confidentially and that no records kept will bear your institution's name.

The questions are about your organizational current practices and some key aspects of performance evaluation of Suggestion Scheme in your organization.

1. What is your organizational status?
2. Does your Organization have a dedicated lean department and adequate personnel to handle lean change? Yes or No.

3   Is there a periodic training of staff in Kaizen/Lean principles in your Organization?

4   Are Kaizen/Lean principles adopted in your organizational processes?

5   How can you describe the implementation of Kaizen Suggestion scheme in your Organization?

6   Is there a clear or systematic mechanism for the assessment of suggested ideas in your Organization?

7   Can you describe the reward system or motivational incentives for participation in ideas suggestion in your company?

8   What suggestions do you have for improving the performance of Kaizen Suggestion Scheme in your company?

Thank you for sparing some time out of your busy schedule to make this meeting possible. I wish to also thank you for the insights I have gained from your rich experience which will help in compiling data for this research.