



**IMPLEMENTATION OF KAIZEN COSTING TOWARDS  
IMPROVING COST MANAGEMENT AT THE WATER  
AND SANITATION AND ELECTRICITY DEPARTMENTS  
OF THE ETHEKWINI MUNICIPALITY, KWAZULU-  
NATAL**

**by**

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degree**

**of**

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## **DECLARATION**

I, Siyanda Percy Khuzwayo, declare that this dissertation is a representation of my own work in conception and execution. This work has not been submitted in any form for another degree at any university or institution of higher learning. All information cited from published or unpublished works have been acknowledged.

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## ABSTRACT

Little is known about kaizen costing opportunities and challenges in service organizations since little research has been conducted about its implementation in this sector (Singh and Singh 2009: 63). Kaizen costing is a management accounting technique that is mainly focused on improving the cost management of the organisation. Since the cost management performance of South African municipalities is very poor, the purpose of this study is to evaluate whether implementing kaizen costing will improve cost management at the water and electricity departments in eThekweni municipality. Studies have shown that there are a lot of unexploited benefits which can be gained by South African municipalities as well as other organisations by implementing kaizen costing.

This is a quantitative descriptive case study of the Water and Sanitation and Electricity Departments in the eThekweni Municipality where data was collected from the target respondents using questionnaires. The 320 questionnaires, which consisted of predominantly closed-ended questions, were self-administered to the target respondents. The results were analysed using the IBM Statistical Package for Social Sciences (SPSS) version 22.0.

The findings of this study revealed that the adoption of kaizen costing may be successful in improving the cost management inefficiencies faced by the South African municipalities. Based on the findings, the majority of the respondents indicated that they would embrace and support the application of a kaizen costing at the Water and Sanitation and Electricity Departments in the eThekweni Municipality.

The study recommends that the Water and Sanitation and Electricity Departments in the eThekweni Municipality should consider implementing kaizen costing to improve its cost management.

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## CHAPTER ONE

### CONTEXT, SCOPE AND STRUCTURE OF THE STUDY

#### 1.1 Introduction

This chapter begins by highlighting the background of the study and describes the purpose behind the intention for implementation of kaizen costing. The chapter also reveals the problem that service organisations lack modern approaches towards cost management. The objectives of this study are also introduced in chapter. Lastly, but not least, this chapter will explore the significance of the study and outline the structure of the dissertation.

#### 1.2 Background of the study

Staying ahead of the competition and maintaining competitiveness have posed challenges for organisations throughout the world. Not only competition, but the acquisition, production and distribution of goods and services in a sustainable and profitable manner also contributes significantly to such challenges (Drury 2008: 538). Such challenges include meeting and exceeding customer demands, coping with emerging technological advances in the processes and operations of an organisation and also adherence to government legislations (Rothwell 2010: 1). Some organisations that were considered traditionally powerful and dominant have collapsed due to failure to respond to these worldwide challenges (Rothwell 2010: 1). Amongst other systems, management accounting systems play a major role in responding to the challenges that are faced by organisations (Drury 2008: 538). In response to these challenges organisations need to do away with traditional costing systems such as standard costing and adopt modern management accounting systems such as kaizen costing. Modern management accounting systems are considered best for organisations that seek to stay ahead of the competition while making continuous cost improvements in the goods and services they offer to their customers.

Japanese manufacturing organisations have responded to these challenges by reconsidering their management accounting systems (Modarress, Ansari and Lockwood 2005: 1751). The traditional management accounting systems were inadequate for

keeping up with the technological advances in processes and operations, continuous cost improvements and meeting and exceeding ever changing customer demands. The modern management accounting system that is widely adopted by Japanese manufacturing organisations is kaizen costing. Manufacturing organisations in other countries, such as the United States of America (USA) and United Kingdom (UK), have adopted kaizen costing for more or less the same reasons to that of the Japanese manufacturing organisations which have adopted it.

Several studies have shown that kaizen costing is recommended as the best management technique that can be used to improve the cost management of an organisation (Modarress, Ansari and Lockwood 2005: 1751, Okoye, Egbunike and Meduoye 2013: 121, Al Smadi 2009: 204; Henri, Boiral and Roy 2015: 1). Such improvements in cost management include continuous cost reduction, process and operation improvement, value addition, waste elimination, and quality improvement (Drury 2008: 559 - 561). Kaizen costing has received much attention in the manufacturing sector and has proven to be successful in improving cost management for these organisations. However, little is known about its application in the service sector since little research has been conducted about its implementation in the service sector (Singh and Singh 2009: 63). Kaizen costing can be applied in any sector of the economy to improve cost management (Khan and Shafqat Hameed 2012: 32). The service sector, such as the municipalities, is also more responsive to the challenges faced by the rest of the organisations throughout the world. However, the focus of this study is on South African municipalities.

The priority of South African municipalities is to ensure that all citizens in South Africa are provided with services in a sustainable and satisfactory manner. The vision for South African local governance is “People centred sustainable co-operative governance, which focuses on effective service delivery responsive to the needs of the community” (Department of Cooperative Governance and Traditional Affairs 2014: 11). In the 2015 review of the Supply Chain Management (SCM) of the South African municipalities, it was acknowledged that there are very well known imperfections with the public sector SCM. These imperfections include constant allegations of corruption and inefficiency (The National Treasury 2015: 4). This is evidenced by the occasional violent protests against setbacks in service delivery by municipalities (The National Treasury 2015: 4; Department of Cooperative Governance and Traditional Affairs 2009: 4). This clearly



outlines the pressure that South African municipalities are faced with in order to respond to the needs of municipality service users and customers as well as other relevant stakeholders, such as employees, suppliers and even government itself.

The South African government has enacted legislation that set out frameworks and key requirements for municipal operations, planning, budgeting, governance and accountability (The National Treasury 2011). These critical pieces of legislation include the Municipal Structures Act, the Municipal Systems Act, the Municipal Finance Management Act 56 of 2003 (MFMA) and the Property Rates Act. This also clearly indicates that municipalities are not immune to the challenges faced by other organisations throughout the world. The main objective of the MFMA is to provide sound financial and cost management practices to enable municipalities to provide sustainable service delivery (The National Treasury 2011). According to The National Treasury (2011), since the MFMA inception, there have been significant improvements in the financial management of municipalities. However, there is still room for improvement seeing that there has been a plethora of unending reports on poor service delivery accompanied by mismanagement and unaccountability of municipal funds as a result of poor cost management in the municipalities.

According to Khoza (2005: 291), the inefficiency problems that South African municipalities face result from applying the assumption that each function within the organisation is independent of other functions. This is also supported by Pillay, Steyn and Sommerville (2013: 111 - 113) who found that South African municipalities apply traditional costing systems that are not aligned to continuous cost improvements. As a result, Khoza (2005: 291) and the Department of Cooperative Governance and Traditional Affairs (2009: 55) clearly state that the South African municipalities perform poorly on financial and cost management. Hence service delivery is compromised. Neither Khoza (2005) nor Pillay, Steyn and Sommerville (2013: 111 - 113) investigated the adoption of kaizen costing in South African municipalities. Hence this study intends to investigate adoption of kaizen costing in South African municipalities.

EThekwini Municipality has been selected as a case study in which the application of kaizen costing is going to be explored. EThekwini Municipality is one of 226 municipalities and it operates in the same manner as the other South African municipalities (The Local Government Handbook 2015). The eThekwini Municipality

has two significant income generating departments, i.e. (1) Electricity and (2) Water and Sanitation. These are also the two departments that face financial and cost management problems. This is evident from the consecutive increases in losses being incurred over the past years by these departments (The Durban eThekweni Municipality 2012, The Durban eThekweni Municipality 2013; The Durban eThekweni Municipality 2014). Thus, the focus of this study is on assessing if kaizen costing could improve the cost management problems faced the eThekweni Municipality.

### 1.3 Problem statement

Since 2010, the Water and Sanitation and Electricity Departments of eThekweni Municipality have had difficulties in managing costs pertaining to water and electricity. As result, the losses presented in Table 1.1 below were incurred by the Water and Sanitation and Electricity Departments.

<b>Table 1.1: Water and Sanitation Department and Electricity Department losses</b>		
Year	Water and Sanitation Department losses	Electricity Department losses
2010	R160.4 million	R406.2 million
2011	R262.8 million	R373.7 million
2012	R364 million	R411.0 million
2013	R396 million	R513.0 million

Source: The Durban eThekweni Municipality (2012: 298-299); The Durban eThekweni Municipality (2013: 331-333); The Durban eThekweni Municipality (2014: 367).

The eThekweni Municipality management has been and is still trying to curb the inefficiencies in cost management of the Water and Sanitation and Electricity Departments through the introduction of systems and checks and balances, however increases in water and electricity losses still prevail. According to Pillay, Steyn and

Sommerville (2013: 111 - 113), none of the systems' checks and balances introduced by municipalities to manage cost are centered on continuous cost reduction.

#### **1.4 Research question**

The research question which this study addresses is: Will the implementation of kaizen costing improve cost management at the Electricity and Water and Sanitation Departments of the eThekweni municipality?

#### **1.5 Research aim**

The research question can be formulated into the following research aim: To assess the perspectives of managers and non-managers in the Electricity and Water and Sanitation Departments of the eThekweni Municipality as to whether the implementation of kaizen costing will improve cost management in those departments.

The research aim leads to the following research objectives.

#### **1.6 Research objectives**

As indicated above, the aim of this study is to assess managers' and non-managers' perspectives on whether implementing kaizen costing will improve cost management at the Electricity and Water and Sanitation Departments of the eThekweni Municipality. The following objectives are set to achieve the aim and answer the research question of this study.

To examine respondents' perspectives of:

1. opportunities regarding the implementation of kaizen costing at the Water and Sanitation and Electricity Departments of the eThekweni Municipality;
2. the structures and attitudes required to implement kaizen costing successfully;
3. the advantages of implementing kaizen costing;
4. the necessary attributes of management and employees to successfully implement kaizen costing; and
5. any disadvantages resulting from the introduction of kaizen costing.

## **1.7 Significance of the study**

Although numerous empirical studies have been conducted mainly in manufacturing organisations on the implementation of kaizen costing towards improving cost management, little is known about its application and impact in the service sector. The findings of Pillay, Steyn and Sommerville (2013: 111 - 113) that management approaches used in South African municipalities are inadequate for continuous cost improvements is the impetus for this study. According to The National Treasury (2011), the objective of the MFMA is to provide sound financial and cost management practices to enable municipalities to provide sustainable service delivery. The MFMA promotes the use of modern financial and cost management approaches in the South African municipalities. Despite this, there is evidence that the South African municipalities still use traditional cost management approaches.

This research intends to promote the use of modern cost management approaches in eThekweni Municipality so that it can stay competent and relevant in its mainstream business. Kaizen costing is particularly useful for an organisation that aims to improve its cost management gradually without breakthrough inventions that would require huge investments. It is hoped that implementing kaizen costing will improve cost management at the eThekweni Municipality and that communities that fall under the governance of the eThekweni Municipality would also benefit from improved service delivery and cost management.

## **1.8 Organisation of the study**

The dissertation consists of five chapters which are briefly summarised below.

### **Chapter 1:** Context, Scope and Structure of the Study

The context of this study is covered by this chapter through highlighting the problem statement, study aim and objectives, background and significance of the study.

### **Chapter 2:** Literature Review

This chapter focuses on the extensive review of the existing literature, regarding the implementation of kaizen costing towards improving cost management.

### **Chapter 3: Research Methodology**

This chapter outlines the research methodology employed to conduct this study. The main sections that are covered in this chapter include: the research paradigm and methods used; the methodological approach adopted; the population, sample and sampling method; research instrument; the response rate; data preparation and analysis; the limitations; and reliability and validity.

### **Chapter 4: Presentation and Discussion of the Results**

This chapter provides the detailed analysis, interpretation and presentation of the results for this research study in relation to the achievement of the research objectives.

### **Chapter 5: Summary, Conclusions and Recommendations**

This chapter presents the summary and conclusions in terms of how this study's research objectives were attained. It then outlines the limitations of this study there evidenced during and after the data collection and then concludes by outlining the recommendations and suggestions for further research.

## **1.9 Summary**

This chapter highlighted the background of this study and described the purpose of assessing the implementation of kaizen costing in the eThekweni Municipality. The chapter also outlined the problem faced by the eThekweni Municipality in its cost management. It introduced the objectives that are intended to address the aim of this study. The significance of this study was also discussed in this chapter. The structure of the dissertation was also covered in this chapter.

The following chapter focuses on the literature review that critically assesses the application of kaizen costing with the intention to improve cost management.

## CHAPTER TWO

### THE LITERATURE REVIEW

#### 2.1 Introduction

The previous chapter provided the background to this study as well as an introduction to the problem statement, aim, objectives and a brief overview of the chapters covered in this study. This chapter reviews the pertinent literature and discusses the theoretical framework pertaining to the implementation of kaizen costing with regards to improving cost management. It first presents the background to the South African municipalities and the theoretical concept of kaizen costing. It then discusses the internal environmental factors within the context of kaizen costing. Such factors include organisational culture, leadership and employee empowerment. The chapter further explores literature pertaining to the market environmental factors that are associated with the implementation of kaizen costing. These factors mainly focus on customer demands and satisfaction. Literature pertaining to studies investigating the implementation of kaizen costing is presented and addressed within the context of the South African municipalities. Last, but not least, the eThekweni Municipality Departments that are selected to be studied in this research project are discussed.

It is of paramount importance for the researcher to have a broad background information and detailed understanding thereof for the study under investigation (Khomu 2007: 8). Major and Savin-Baden (2010: 180) define the literature review as a critical overview and evaluative report of information found in the literature about the current state of knowledge of a given topic. In order to become acquainted with the latest developments or issues associated with the topic under investigation, an in-depth critique of existing literature has to be conducted (Gabula 2012: 15). Hence, the aim of this chapter is to critically review the relevant completed research related to the implementation of kaizen costing in an attempt to achieve the objectives of this study as set out in the previous chapter. The objectives of this research are to examine respondents' perspectives of:

1. opportunities regarding the implementation of kaizen costing at the Water and Sanitation and Electricity Departments of the EThekweni municipality;
2. the structures and attitudes required to implement kaizen costing successfully;

3. the advantages of implementing kaizen costing;
4. the necessary attributes of management and employees to successfully implement kaizen costing; and
5. any disadvantages resulting from the introduction of kaizen costing.

## **2.2 A background to the South African municipalities**

In South Africa, there are 226 municipalities which are grouped into 44 district municipalities and 8 metropolitan municipalities (The Local Government Handbook 2015). EThekweni Municipality is one of 226 municipalities and it operates in the same manner as the other South African municipalities. The priority of South African municipalities is to ensure that all citizens in South Africa are provided with services in a satisfactory manner. The vision for South African local governance is “People centred sustainable co-operative governance, which focuses on effective service delivery responsive to the needs of the community” (Department of Cooperative Governance and Traditional Affairs 2014: 11). In the 2015 review of the supply chain management (SCM) of the South African municipalities, it was acknowledged there are very well known imperfections with the public sector’s SCM. These imperfections include constant allegations of corruption and inefficiency (The National Treasury 2015: 4). This is evidenced by the occasional violent protests against setbacks in service delivery by municipalities (The National Treasury 2015: 4; Department of Cooperative Governance and Traditional Affairs 2009: 4).

The South African government has enacted legislation that set out frameworks and key requirements for municipal operations, planning, budgeting, governance and accountability (The National Treasury 2011). Amongst these Acts is the Municipal Finance Management Act (MFMA) 56 of 2003. The objective of the MFMA is to provide sound financial management practices to enable municipalities to provide sustainable service delivery (The National Treasury 2011). Since the MFMA inception, there has been significant improvements in the financial management of municipalities. However, there is still room for improvement because there has been continuous poor performance in terms of cost management in the municipalities.

## **2.3 Theoretical concept of kaizen costing**

In order for kaizen costing to be understood within the context of a municipal environment, wherein this study assesses its possible implementation, its theoretical concepts need to be explained thoroughly. The next section explains the theoretical concepts of kaizen costing within the following themes:

- Nature and definition of kaizen costing,
- Characteristics of kaizen costing,
- Relationship between kaizen costing and cost management, and
- Advantages of kaizen costing.

### **2.3.1 Nature and definition**

Kaizen is a Japanese term that was launched by Masaaki Imai in Japan in 1986 (Rof 2011: 105). Its culture originated in Japan in the 1950's (Khan and Shafqat Hameed 2012: 32). Kaizen is a combination of two words which are: KAI (meaning change) and ZEN (meaning for better); thus it is defined as continuous improvement in all aspects of organisational performance (Rof 2011: 105). Rof's (2011) viewpoint of Imai's idea for kaizen is for the pursuit of perfection. However, perfection is never achieved, hence, the notion of continuous improvement. Burns, Quinn, Warren and Oliveira (2013: 491) explain continuous improvement as the process taken by an organisation to seek more ways of small, incremental yet never ending improvements. Burns *et al.* (2013: 492) further state that continuous improvement is an application of the kaizen principle and when continuous improvements are applied to all aspects in an organisation that triggers cost improvements, it becomes kaizen costing.

Kaizen costing refers to incremental continuous cost reduction below standard costs (Modarress, Ansari and Lockwood 2005: 1753; Singh and Singh 2009: 51; Monden and Hamada 1991: 16-17; Mishra and Gupta 2010: 58-59). According to Drury (2008: 37) incremental cost is a cost incurred for producing additional units. Drury (2008: 543 - 544) further states that the concept of cost reduction in the context of kaizen costing refers to improvement or savings in costs. These savings or cost improvements result in small improvements in the short run but in the long run, substantial improvements in the reduction of all cost areas of the organisation are achieved.



Blocher, Chen and Lin (2013: 526) state that a product's complete life cycle costs, with the exception of the design phase costs, can be improved with kaizen costing. Cost reduction is also achieved in marketing and distribution functions through the application of kaizen costing (Blocher, Chen and Lin 2013: 526). Although authors (Modarress, Ansari and Lockwood 2005; Rof 2011; Monden and Hamada 1991; Mishra and Gupta 2010) argue that kaizen costing can be applied in any function or process or service within the organisation, the literature on the implementation of kaizen costing is largely based on manufacturing costs in manufacturing organisations (Singh and Singh 2009).

According to Blocher, Chen and Lin (2013: 526), kaizen costing occurs during the manufacturing phase where cost management techniques, such as operational control, total quality management and theory of constraints are applied to seek continuous improvements in support of further cost reductions. Jayeola, Sokefun and Oginni (2012: 105) concur with Blocher *et al.* (2013) and add that, to complete the life cycle of the product cost management, target costing is applied at the design phase. Kaizen costing does not focus much on the costing routine but rather concentrates on involving all employees of the organisation in seeking ways for continuous improvements in lowering costs (Sani and Allahverdzadeh 2012: 42). Jayeola, Sokefun and Oginni (2012: 105) assert that cost reductions are achieved through improved efficiency in business operations resulting in cost savings.

### **2.3.2 Characteristics of kaizen costing**

Although kaizen costing is more apparent in manufacturing organisations, other sectors are increasingly realizing its benefits (Singh and Singh 2009). Its main objective in manufacturing organisations is to reduce the cost of goods or services below those of its competitors (Bhuiyan and Baghel 2005). Bhuiyan and Baghel (2005) further assert that the driving force behind rivalry between organisations to produce goods and services at lower costs is customer demands. This is why organisations resort to using kaizen costing because it is centred on satisfying customer demands.

Kaizen costing's main characteristic is that it seeks small improvements on costs which are achieved on a continuous basis through involving all employees, especially the shop floor employees, by engaging them in continuous improvement initiatives (Manos 2007:

47-48). Further to the employee involvement, cost reductions are achieved through the concerted efforts between departments in the organisation (Monden and Hamada 1991: 26). The chain of individuals or units involved in seeking cost improvements through the application of kaizen costing expands further by including cost improvements through collaboration between the organisation and suppliers in an attempt to reduce waste and costs of inventory (Collier 2012: 348). Collier (2012) further states that cost reduction can be achieved by involving all budget holders. The cost reduction targets are determined by using latest actual costs as the target costs to be reduced for the following period (Monden and Hamada 1991: 25). According to Monden and Hamada (1991: 27) kaizen costing is target driven and results are mainly quantifiable in terms of costs. Monden and Hamada (1991) further assert that kaizen costing begins from the manufacturing phase and continues until the product or service reaches the final customer.

### **2.3.3 Relationship between kaizen costing and cost management**

According to Lucey (1996: 1 - 3), cost management is a function within the organisation in any department or sector that deals with planning, controlling and monitoring of costs which in turn plays a crucial role in decision making. Kaizen costing involves a process where employees are involved in planning, controlling and monitoring to come up with suggestions of how each function can be performed better or how cost can be reduced while maintaining quality (Drury 2008: 559 - 561). Cost management is the development and use of financial information about cost and revenues and non-financial information about customer retention, productivity, quality and other key success factors for an organisation (Blocher, Chen and Lin 2013: 3). Hansen and Mowen (2006: 1) add that cost management is concerned with provision of information to internal users that is useful for determination of product costs, assessment of customer demands as well as collaboration with suppliers. It is actually the kaizen members that provide information to management to make decisions about product or service costs.

Cost management involves the use of mechanisms such as target costing, life-cycle costing, activity based management, Just-In-Time, value chain analysis, and value engineering, taken on an ad hoc basis by management using financial or nonfinancial data such as process improvements to reduce costs and improve continuously (Drury

2008: 559 - 561). Kaizen costing can be used as a mechanism of cost reduction intended by cost management, and is sometimes referred to as a subset of cost management. However, in most cases, it can be used as a standalone mechanism to subsidise the application of cost management and other functions in an organisation (Drury 2008: 559).

Although the focus of cost management is to reduce cost, customer satisfaction is concurrently taken into consideration (Drury 2008: 538). Drury (2008: 538) further states that cost reduction is not only based on accounting information but is also based on other actions taken by managers such as finding effective and efficient production processes. Similarly, kaizen costing's main objective is to reduce costs at no expense to the customer. Collier (2012: 362) agrees with Drury (2008) and further adds that kaizen costing also focuses on exploiting efficient and effective ways of improving distribution and purchasing functions.

#### **2.3.4 Advantages of kaizen costing**

Kaizen costing does not require the understanding of complicated concepts or the creation of breakthrough inventions or specialized skills, and requires only common sense (Kyōkai 1992: 6-7). The costs of implementing kaizen costing are very low since kaizen costing uses available resources within the organisation (Rof 2011: 108). It also improves practices, processes and employee productivity which, in turn, increases the competitiveness of an organisation (Rof 2011: 108). Resources such as money and time are saved through the application of kaizen costing (Manos 2007: 47). Manos (2007) further highlights that there is a reduction in inventory and the number of employees required to perform tasks, and that lead time can also be reduced which results in process improvements.

From the definition, key concepts, characteristics, and advantages of kaizen costing as discussed above, it can be seen that kaizen costing is mainly confined to the internal and market environment. Therefore, the following two sections examine the key determinants of an internal and market environment in relation to kaizen costing.

## **2.4 Kaizen costing within the internal environment**

The internal environment is mainly concerned with factors such as strategies chosen by the organisation to achieve its goals, vision and mission. Such strategies have a direct bearing on the structures and attitudes such as leadership structures and styles, support structures communication processes, management structures and process, and interpersonal relationships among management and employees. These structures and attitudes influence the activities of an organisation (O'Reilly, Chatman and Caldwell 1991: 487 – 488). Certain other factors of the internal environment include the behaviour in the organisation with respect to delegation of authority, involving employees in decision making and empowering of employees (Hornsby, Kuratko and Zahra 2002: 269). Jain, Trehan and Trehan (2009: 7) concur with Hornsby, Kuratko and Zahra (2002) and O'Reilly, Chatman and Caldwell (1991) and further assert that out of all the internal environment factors, the leadership and organisational culture take precedence in almost all organisations. According to O'Reilly, Chatman and Caldwell (1991: 487 - 488) and Smit, Cronje, Brevis and Vrba (2013: 66), the internal environment factors tend to determine how employees behave in the organisation. Martins and Terblanche (2003: 70) classify communication processes, management structures and processes, and interpersonal relationships among management and employees as internal environment factors that are the subset of organisational culture.

The internal environmental factors that are apparent in kaizen costing application include organisational culture, employee empowerment and leadership (Monden and Hamada 1991: 26). This is supported by Collier (2012: 348) who stated that kaizen costing relies heavily on employee empowerment. In addition to Collier's (2012: 348) viewpoint, Rof (2011: 108) states that the relationship among employees, management structures and processes play a major role in the application of kaizen costing.

Hence, for the purposes of this study, this section focuses on a critical evaluation of specific literature and empirical studies based on the impact of implementing kaizen costing on organisational culture, leadership and employee empowerment. The discussion in this section takes the format of first defining the determinants of the internal environment i.e. organisational culture, leadership, and employee empowerment. Thereafter, the studies which investigated such determinants in particular are discussed.

### **2.4.1 Organisational culture**

Organisational culture is concerned with beliefs, shared values, principles and behaviours of groups or individuals within the organisation that determine how they do things or how things are happening in the organisation (Martins and Terblanche 2003: 65). Mohelska and Sokolova (2015: 1012) argue that organisational culture has been defined in many ways but that the common elements among these definitions are attitude, beliefs, behavioural patterns, and basic values of employees within the organisation.

The organisational culture that supports the application of kaizen costing involves application of the experience curve and encourages collaborative learning (Sani and Allahverdizadeh 2012: 173). The experience curve refers to the diagrammatical presentation of an inverse relationship between cumulative quantity produced and total cost of producing such quantities (Sani and Allahverdizadeh 2012: 173). In other words, experience means that as employees become more experienced in production processes, all costs related to production of goods and services become lower. Mitchell, Nørreklit and Jakobsen (2013) concur with Sani and Allahverdizadeh (2012: 173) and further mention that it is of paramount importance that the organisational culture practices ethical principles in its application of kaizen costing. The principles and values that are used by employees to guide their actions and decisions in the organisation have to be determined (Martins and Terblanche 2003: 65). These principles and values are referred to as the code of ethics. Therefore, employees and their leaders have to adhere to such values and principles to sustain an ethical organisational culture (Martins and Terblanche 2003: 65).

Mohelska and Sokolova (2015) highlight that for an organisation to get the best out of its employees there should be a strong interpersonal relationship among employees. The interpersonal relationship is determined by positivity among employee attitudes towards achieving organisational goals. Teamwork as well as relating positively among managers and employees also create a strong interpersonal relationship in the organisation. Hence, the level of productivity increases and quality of products and services improve. This results in cost reduction in the organisation (Mohelska and Sokolova 2015: 1011). According to Manos (2007: 47-48), the application of kaizen costing fosters the culture of teamwork in the organisation because it is believed that

organisations can get the best out of employees if they work together towards achievement of organisational goals.

Learning at all levels of the organisation is encouraged through the application of kaizen costing (Collier 2012: 362). In the organisation that applies kaizen costing, people have an insatiable desire for success. This attitude creates an environment where employees are eager to learn and where learning is constant ( Collier 2012: 362). Singh and Singh (2009: 63) emphasise that the need for the adoption of kaizen costing in the service sector has augmented the complexity, uncertainty, and rapidity of change in the business environment. This makes it increasingly relevant for the service sector to learn and apply new and updated knowledge on modern management approaches. Drury (2008: 538) states that through the application of kaizen costing the organisation's adaptability increases continuously as everyone in the organisation is continuously learning.

Values, norms and beliefs can either support or inhibit creativity and innovation from employees, depending on their extent towards influencing individuals or groups in the organisation (Martins and Terblanche 2003: 65). Martins and Terblanche (2003: 65) further state that creativity and innovation flourish when an organisation implements a strategy where idea generation and implementation are encouraged, structures that allow for flexibility are in place, freedom and teamwork cooperation are encouraged, and an open-door communication policy that allows for openness in communication between individuals, teams and departments to gain new perspectives is maintained. This creates an atmosphere where employees feel that their ideas are being valued in the organisation and are encouraged to be more creative and innovative (Alvesson and Sveningsson 2015: 45).

The origin of kaizen costing started in Japan (Al Smadi 2009: 209). Other countries such as USA, UK and Netherlands have applied it successfully (Al Smadi 2009: 209). In Japan, the organisational culture is dominated by collectiveness of employees (T. Jackson 1999: 320). Japanese culture traits that underlie kaizen success are: strong long-term orientation; moderate individualism; adequate empowerment of employees; and strong masculinity (Recht and Wilderom 1998: 10).

One of the main characteristics of kaizen costing is that it relies heavily on employee empowerment (Khan and Shafqat Hameed 2012: 32). This is compatible with the main dominating factor in the South African organisational culture. The organisational culture

in South African organisations is dominated by ethnicity where previously disadvantaged racial groups are empowered to make decisions and are promoted to managerial positions (Thomas and Bendixen 2000: 516). However, compared to Japanese and other countries' organisational culture, South Africa's is dominated by individualistic and passive stance (T. Jackson 1999: 320). Due to this, it is not known if the application of kaizen costing can be successful in South African organisations. Hence, the purpose of this study is to assess whether kaizen costing can be successful if applied in South African municipalities. Although certain studies, such as Khoza (2005) and Pillay, Steyn and Sommerville (2013), investigated certain aspects of cost management in South African municipalities, but they did not investigate the application of kaizen costing. In Khoza's (2015) study it is evident that South African municipalities are facing cost management problems similar to that of other countries (Khoza 2005: 291). These countries, i.e. Japan, USA and the UK, applied kaizen costing principles to resolve their costing management problems. According to Khoza (2005: 291), the problems in South African municipalities are as a result of the inefficiencies in the systems and processes, application of traditional cost management systems and treating functions of the organisation independently from each other.

The empirical studies that have investigated organisational culture in relation to the application of kaizen costing are discussed in the following section.

#### **2.4.1.1 Studies investigating organisational culture**

This section first presents the studies, and thereafter discusses each study's results.

An empirical study investigating organisational culture in relation to implementation of Advanced Manufacturing Technology (AMT) took place in the USA (McDermott and Stock 1999). This study employed a survey methodology for data collection. A sample of 470 plant managers and vice-presidents was selected from 11 industries. Another empirical study investigating organisational culture was conducted in Brisbane, Queensland, Australia (Parker and Bradley 2000). However, this study was focused on the public sector. It also employed a survey methodology to collect data from the six largest departments in the public sector where a total of 530 participants were chosen. Another empirical study with a public sector focus was conducted by Verbeeten (2011) in the Netherlands' public sector organisations to validate the claim that recent

developments in the public sector have increased the demand for and use of cost management information in public sector organisations. The research approach taken was a survey of financial managers in 57 organisations. Thomas and Bendixen (2000) conducted an exploratory empirical study in South Africa to describe the impact of ethnicity on management culture and perceived management effectiveness in South Africa. In addition, their study attempted to extract organisational cultural and management development implications for the country with a view to developing an internationally competitive base. The population for this study consisted of all middle managers in the major metropolitan areas in South Africa. A sample of 580 participants was selected. A quota sampling technique in order to ensure that a minimum of 20 respondents are selected in each ethnic group was applied. Hofstede's (1994) research instrument called VSM94 was employed in this study. This instrument comprised of a self-completion questionnaire which measured the dimensions of management philosophies and culture. The results of these studies are discussed next.

McDermott and Stock (1999: 524) found the organisational culture to be of little value in relation to any operations management or technology implementation, yet it is a key determinant of the successful implementation of any improvement initiative in an organisation particularly with regards to technology. McDermott and Stock's (1999) study focused on two groups of organisational culture, i.e. group and development culture. The outcomes of the AMT implementation were also categorised into two types, i.e. operational and organisational benefits. According to McDermott and Stock (1999: 524 – 525), group culture is characterised by employee empowerment, strong human relations, positive attitudes among employees, team work and a focus on the internal organisation on group culture. However, the emphasis on group culture is flexibility and change. This is because, according to McDermott and Stock (1999: 525), group culture is more appropriate in the environment where rapid changes in the market are dominant. Employee satisfaction and their commitment to their work is likely to be evident in a group culture oriented organisation. As a result, this may improve an organisation's competitiveness. McDermott and Stock's (1999) study found elements of group culture to be more directly associated with the outcomes and the satisfaction of new technological implementation. The main characteristics of developmental culture are resource acquisition, creativity, adaptation to the external environment and focuses primarily on growth. Developmental culture also emphasizes flexibility, but it is



externally oriented (McDermott and Stock 1999: 525). McDermott and Stock's (1999) study reveals that development culture is not directly associated with the expected outcomes of the AMT implementation.

It can be concluded that McDermott and Stock's (1999) study suggests that the implementation of kaizen costing initiative is more likely to be perceived as useful in an organisation that is more group culture oriented than one which is developmental culture oriented. This is mainly because, as mentioned by Modarress, Ansari and Lockwood (2005: 1751), kaizen costing initiatives include implementation of technology aided systems that are aimed at improving cost management of an organisation. The implementation of AMT is one of the kaizen costing initiatives because its main objectives, according to McDermott and Stock (1999: 521) are to improve work flows and communication. McDermott and Stock (1999: 521) further mention that the benefits such as efficiency in mass production, flexibility and efficiency to end-users, as well as doing away with traditional management systems can be achieved through the implementation of AMT.

In Thomas and Bendixen's (2000) study, five dimensions of culture were identified, i.e. individualism, masculinity, long-term oriented, low power distance and uncertainty avoidance. This study reveals two types of the most appropriate organisational cultures that are dominant in organisations within South Africa. The first type is found in organisations that are characterised by low power distance and low uncertainty avoidance. In this type of organisational culture, the determinants of what will happen depends on the situation rather than the rules of hierarchy. The second type of organisational culture is found in organisations that are characterised by low power distance and high uncertainty avoidance where high emphasis is placed on rules to solve all daily problems and where management intervention is only limited to exceptional cases. These two types of organisational cultures are found to be optimal from the employee perspective (Thomas and Bendixen 2000: 516).

The study by T. Jackson (1999: 320), which is covered in more detail in the following section, points out that Japanese organisational culture is dominated by collectiveness of employees whereas South African organisational culture is dominated by individualistic and passive stance. Recht and Wilderom (1998) provide theoretical contributions and experiences of a kaizen-oriented suggestion system (KOSS). The

main purpose of Recht and Wilderom's (1998) article was to discuss the transferability of KOSS to organisations outside Japan. It is concluded that, although the national culture is, to some extent, the reason for kaizen's success in Japan, a successful transfer of KOSS is less dependent on an amenable national culture than on the organisational culture. In Japan, the most important aspect to successfully implement a kaizen oriented system lies in the fact that each employee is involved in taking decisions pertaining to the attainment of the organisational goals and emphasis is placed more on teamwork and less on the individualism (Recht and Wilderom 1998: 10). Recht and Wilderom (1998: 10) further state that although it is hard to find a Japanese mix of culture (national and organisational) outside East Asia, it can be adapted to suit the local cultures in other countries. One of the contributions to high potential teamwork in Japanese organisations stems from the minimal social distance between supervisors and their subordinates (Recht and Wilderom 1998: 17). Recht and Wilderom (1998: 11) also note that kaizen's successful implementation is characterised by extensive use of the intimacy that makes employees positively relate to each other within the organisation. In addition, Recht and Wilderom (1998: 11) note that regardless of the structures, kaizen costing can be implemented successfully.

In a paper (Mândru and Dan 2012) where literature based on the implementation of kaizen costing was presented, it was noted that the ideal organisational culture to successfully implement kaizen costing is one where an employee's own creative ideas are encouraged no matter how wildly unreasonable, illogically or inappropriate the creativity is. This is implemented through the introduction of suggestion systems (Mândru and Dan 2012: 43). Mândru and Dan (2012: 43) also note that, regardless of the type, size, location or any other aspect of the organisation's profile, kaizen costing can be adopted successfully. However, a group culture should be adopted in order to implement kaizen costing successfully. In this type of culture, employees are encouraged to work in teams and make suggestions to improve their performance individually as well as a team (Mândru and Dan 2012: 43). Another review of literature (Alpenberg and Scarbrough 2009: 1) pertaining to kaizen costing maintained that management systems or tools that are introduced in an organisation are intended for improving certain aspects adopted in the current culture.

A major finding of Thomas and Bendixen's (2000) study is that management culture and management effectiveness in organisations within South Africa are independent of the ethnic group and culture. Management effectiveness and management culture can be improved through a combination of formal education and experience. This implies that employees employed by the organisation should possess the necessary education and experience for the positions they are hired for. In addition, Thomas and Bendixen (2000) found that continuous training and development of staff contributes extensively towards developing an organisation's internationally competitive base. This is also noted in a review of literature pertaining to organisation culture and leadership by Mohelska and Sokolova (2015). According to Mohelska and Sokolova (2015: 1012) in order to create conditions for better performance of the tasks imposed on employees, management must ensure that employees are placed in the right positions. In addition to that, management has to be familiar with how to use the right mechanisms of identifying the right human behaviour (Mohelska and Sokolova 2015: 1012). Thomas and Bendixen (2000: 516) also found that the realisation of fully integrated and ethnically diverse management strata is also independent of the corporate competitiveness of organisations within South Africa and as long as the organisation trains and develops its employees for the skills relevant to their positions within the organisation, global competitiveness will be achieved. Another aspect of the organisational culture that Recht and Wilderom's (1998) study provided is employee and job orientation. Recht and Wilderom (1998: 14) mention that for successfully implementing kaizen costing, a mutual commitment between management and employees to ensure personal and family welfare of employees should be present. Recht and Wilderom (1998: 16) also note that if the relationship between management and employees has been destroyed or the employees' perceptions are that management is only interested in employees' productivity, then implementing a kaizen oriented system will be a total failure. To fix this, it will be necessary to revisit the organisation's policies on relations between employees and management (Recht and Wilderom 1998: 16),

Although the organisational culture in South African organisations may appear to be completely different to those of outside organisations where kaizen costing was applied successfully, it can be adapted to suit the local cultures in other countries including South Africa (Recht and Wilderom 1998: 10). This is evident from the study by Jayeola, Sokefun and Oginni (2012: 105) conducted in Nigeria where kaizen costing was applied

successfully. Hence, it may not be valid to say that kaizen costing will not be successful if it is applied in an environment that has an organisational culture that is similar to that of South African organisations. Although studying organisational culture countrywide provides some good insight about how national trends affect the application of kaizen costing, it is necessary to study it sector wise. By sector, reference is made to public and manufacturing sectors.

Parker and Bradley's (2000) study of a post bureaucratic organisational culture in the public sector discovered that there is a broad spectrum of literature on the need for public organisations to adopt successful management approaches adapted from private organisations that are aimed at curbing inefficiencies resulting from application of traditional management systems by public sector organisations. However, Parker and Bradley (2000: 137 - 138) conclude that the public sector resists change to organisational culture because the manner in which public sector organisations perform their activities is part of the broad government strategies and most service delivery as well as production of goods in the public sector is dependent on prevailing political ideologies. Parker and Bradley (2000: 137 - 138) further indicate that, in the private sector, the market forces are the determinants of how the organisations should produce goods as well as provide the service.

Verbeeten's (2011) study provided empirical insights in the design and use of cost management systems in public sector organisations. In this study, it was found that there is a lack of cost management approaches centred along continuous cost reduction in the public sector; and that the cost management approaches that are more apparent in public sector are traditional. However, Verbeeten (2011: 493) notes that, due to the current economic crisis that public sectors face, cost management is essential in providing insights about how costs can be reduced. Verbeeten (2011: 493) further notes that modern cost management systems can be adopted successfully in the public sector. Although the study by Verbeeten (2011) is based in the Netherlands, the findings are similar to Parker and Bradley's (2000) study.

Govender (2009) provides a detailed theoretical background to the challenges faced by managers in the South African public sector. The main challenges addressed by Govender (2009) relate to adopting an organisational culture that is suitable for institutionalising a learning organisation. Govender (2009: 364) states that managers in

the public sector in South African organisations are experiencing some difficulties in supporting a culture of continuous learning. According to Govender (2009: 365), in order to address these challenges, the relationship between employees, employers and other components of the organisation should be strengthened. Govender (2009: 365) also emphasises the senior managers' fundamental role in entrenching the promotion of learning to promote an open and conducive learning environment. Since continuous learning is also a key element for the application of kaizen costing, Govender's (2009) paper certainly provides evidence that Parker and Bradley's study is applicable in South African public sector organisations as well.

This section has focused on a critical evaluation of studies based on organisational culture within the context of implementation of kaizen costing. A comparison between studies conducted in South Africa and other countries on the impact of organisational culture in implementing kaizen costing was also made in this section. Certain commentary articles and literature review papers on kaizen costing were also scrutinised to supplement the discussion and findings of the empirical studies. The following section focuses on an examination of studies and literature based on the impact of leadership towards the implementation of kaizen costing.

#### **2.4.2 Leadership and kaizen costing**

Leadership is one of the management functions which entails the ability of a leader to influence a group of members in terms of the right to use authority on employees, power to influence employee behaviour, the right to delegate work to employees, and be responsible and accountable for all actions of employees within their domain (Badenhorst-weiss, Brevis-Landsberg, Cant, Vrba, Kruger, Machado, Steenkamp, Marx and Mpofo 2013: 225-227). Leadership involves motivating employees to work willingly towards achieving the organisation's vision and mission, strategies and priorities (Smit *et al.* 2013: 309). Smit *et al.* (2013) further state that leadership entails ensuring that the organisation's vision, mission, strategic goals and priorities are communicated to the followers. Ehlers and Lazenby (2010: 59) emphasise that strategic leadership plays an important role in achieving superior performance in a turbulent and unpredictable environment and especially when facing global economic challenges. Because of the nature of kaizen costing, leadership in an organisation plays an important

role in the successful implementation of kaizen costing. In an environment where politics are dominant, charismatic leadership is more appropriate since the performance and satisfaction of employees is strongly related to the personal traits of a leader such as vision driven, self-confidence, and environmental sensitivity (Badenhorst-weiss *et al.* 2013: 231). Al Smadi (2009: 209) also mentions similar personal traits to that of Badenhorst-weiss *et al.* (2013), but what seems to be more important in good kaizen leadership is management's attitude towards employees. Mohelska and Sokolova (2015: 1012) argue that a good leader is one who highly values the knowledge of the social aspects of the behaviour of employees.

The following section provides a detailed discussion of the results, setting and methodology of the studies that investigated the extent to which kaizen costing interrelates with leadership. Certain commentary articles as well as literature based on leadership and kaizen costing are also covered in the following section.

#### **2.4.2.1 Studies investigating leadership culture**

Men and Stacks (2013) examined the influence of organisational leadership style and empowerment behaviour on internal public relations outcomes, in particular, employee perceptions of organisational reputation. An online survey was employed in this study. The study was conducted in the USA in an energy company which provides electrical service for over one million customers in the USA. The questionnaire was administered to a sample of 166 employees. An empirical study was conducted by Anand, Chhajed, and Delfin (2012) in Christie Clinic that provides outpatient health care through 18 clinic locations in East Central Illinois. This research examined the influence of autonomy in day-to-day work on commitment of frontline employees to continuous improvement. It further examined certain aspects of leadership towards the relationship between job autonomy and commitment to continuous improvement. A survey approach consisting of a sample of 796 employees was adopted for this study. The results of these studies are discussed next.

Men and Stacks (2013: 183) compared transformational leadership and transactional leadership styles. Transformational leadership style is mainly concerned with leadership behaviours, such as communicating shared vision and high performance expectations, providing an appropriate role model, fostering collaboration among employees to

achieve collective goals, stimulating new perspectives and ideas, emphasizing the quality of relationships with employees, and concern about employees' individual feelings and welfare to directly cultivate employees' favourable overall perception of the organisation. In contrast, a transactional leadership is mainly concerned with leadership behaviours such as over reliance on contingent reward systems, treatment of employees based on economic and instrumental transactions, and exerting more control on employees (Men and Stacks 2013: 183). The findings of Men and Stacks's (2013) study revealed that transformational leadership style is perceived by employees positively towards the organisational reputation. It is also found that employees feel empowered in their day-to-day work under this type of leadership which, in turn, produces more favourable results for the organisation. Furthermore, this type of leadership style fosters teamwork spirit among employees which in turn improves employee productivity.

The Men and Stacks's (2013) study finds transformational leadership style to be a good source for positive emotions such as pride, admiration, and enthusiasm, satisfaction, organisational commitment and joy in employees at the workplace. It also creates an atmosphere where employees are willing to learn new approaches to business and advance the skills required to perform their jobs. The study concludes that employees' favourable evaluation of the organisation is achieved when employees feel more accepted, trusted, and valued. Employees feel this way when power is being shared with them and when they are engaged in the decision-making process. These are the actions of a transformational leader. This is also supported by a commentary article presented by S. Jackson (1999), where it is noted that visible leadership plays a crucial role in creation and maintenance of continuous improvements. S. Jackson (1999: 63) further states that by involving everyone in decision making and empowering all employees, makes employees realise that their input is important and valued in the organisation. In conclusion, Men and Stacks (2013) point out that, under the transactional leadership style, employees are less likely to be committed to their work and perceive organisational reputation negatively.

The main focus of the current research is on the second aspect examined in the Anand, Chhajed, and Delfin (2012) study. However, certain aspects of the autonomy of employees that are examined in Anand, Chhajed, and Delfin (2012) study will also be

considered in this study. Although this study did not focus on leadership styles that are likely to be suitable for organisations applying kaizen costing, it did capture the links between leadership, in general, towards commitment to continuous improvements. The Anand, Chhajed, and Delfin (2012) study reveals that employee commitment towards continuous improvement initiatives is likely to increase if employees are led by their leaders to believe that they are experts in what they do in their day-to-day work. It also makes them feel obliged to participate and make suggestions to continuous improvements. They also found that if leaders demonstrate care about employee welfare, commitment to continuous improvement is generated in the organisation (Anand, Chhajed, and Delfin 2012: 78). It also appears that when leaders capture and address employees' concerns in their day-to-day work, commitment to continuous improvement by employees is also enhanced (Anand, Chhajed, and Delfin 2012: 79). Lastly, but not least, the findings of Anand, Chhajed, and Delfin (2012) indicate that autonomy in day-to-day work fosters positivity in employee attitudes towards organisational continuous improvements.

In this section, the setting, findings and discussion of the studies investigating leadership were discussed. The discussion was mainly based on a link between leadership and kaizen costing. The major sections covered in the discussion of these studies were: parties involved in leadership in an organisation; the types of leadership styles that are suitable for implementation of kaizen costing; and the types of environments where kaizen leadership is more appropriate. The following section examines the empirical studies as well commentary of literature studies based on employee empowerment. The examination of these studies will be confined within the context of implementing kaizen costing.

### **2.4.3 Employee empowerment and kaizen costing**

Mandru and Pauna (2012: 39) maintain that cost management inefficiencies can be triggered by any area of business operation. According to Collier (2012: 362), the main objective of kaizen costing is to curb cost management inefficiencies. The accomplishment of this objective relies heavily on employee empowerment (Drury 2008: 544). This is achieved through the involvement of every member of the organisation, especially the shop floor employees (Drury 2008: 544). Involvement of



employees at all levels of the organisation is a prerequisite for implementing kaizen costing (Kaur 2014: 2). The shop floor employees are those that work in the lower levels of the organisational hierarchy. According to Collier (2012: 362), kaizen costing strongly emphasises engaging all employees, especially the shop floor, if suggestions and implementation of improvements to the organisation are likely to be more effective. Empowering such employees results in more interactive processes between management and the staff (Kaur 2014: 7). The interaction increases in the form of sharing of influence and control by management with employees.

Employee empowerment refers to the authority or opportunity given to employees to make decisions in any organisation based on their competence in terms of control and decision making (Bagraim, Werner, Cunningham, Potgieter and Viedge 2007: 211). This is done through transferring autonomy and responsibility to employees at lower levels in the organisational hierarchy because it is believed that, by doing so, it can increase responsiveness to the problems or issues faced by the organisation (Creed 2011: 111 - 113). Creed (2011: 111 - 113) further states that this is also done to enhance employee commitment towards achieving organisational goals. The elements of employee empowerment, according to Bagraim *et al.* (2007: 210 - 211), involves authority being delegated from those who have positional power to the lower possible level with the organisation or society with the following objectives: to increase accountability among the lower levels; to develop problem-solving capabilities in the people at these levels; to assist these people in taking charge of their own destinies; to help all these people to achieve their full potential; and to have the positive impacts of empowerment spill over into the entire lives of these people.

The most important aspect of employee empowerment is that an organisation should make sure that it fits with the organisational culture. This can be assured by engaging employees in developing goals and strategies. The organisation must also be prepared for any failures that might occur as a result of empowering employees. Empowerment should be viewed as a long-term investment and a risk associated task (Bagraim *et al.* 2007: 211). Mandru and Pauna (2012: 41) concur with Bagraim *et al.* (2007) and further add that the other important aspect of employee empowerment towards continuous cost improvement is in the quality of employees. The quality of employees is ascertained through making them understand the necessity for such improvements (Mandru and

Pauna 2012: 41). Mandru and Pauna (2012: 43) further emphasised that employees should be encouraged to work effectively in teams. Management seeks suggestions for continuous improvements from employees which are then reviewed for feasibility and implemented if competent and cost-effective (Kaur 2014: 6). Management should also consider encouraging employees to come up with their own ideas, no matter how wildly unreasonable, illogical, or inappropriate they are (Mandru and Pauna 2012: 43). Creed (2011: 111 - 113) emphasises that the organisation has to develop and train its employees in order to foster the culture of continuous improvements in an organisation. Although empowering employees might act as a great strategy towards achieving continuous improvement, the organisation has to clearly define all roles and responsibilities that employees are expected to undertake and be accountable for (Cook 2008: 3).

According to Cook (2008: 3), if employees are given certain privileges towards ownership in decision making, the likelihood of achieving organisational goals increases. Cook (2008: 3) further states that, if employees are empowered in an organisation, employee satisfaction and productivity can be improved. Kaur (2014: 4) agrees with Cook (2008) and states that empowering employees in the organisation also allows them to understand the strategic direction of the organisation and respond intelligently and independently to customer needs. Kaur (2014: 4) further states that an employee's loyalty to the organisation is strengthened through empowerment. Through engaging employees, productivity and better service to customers is guaranteed (Cook 2008: 3). Through employee empowerment, an organisation can become more profitable, innovative and competitive.

Employee empowerment in the organisation brings about motivation, and as a result, the organisation's processes and programs are optimised, hence cost reduction targets are attained (Kaur 2014: 4). Kaur (2014: 4) also states that, through employee empowerment, employees are allowed an opportunity to improve on their current skill set as well as developing new skills and gaining experience. Letting employees take ownership of the problems develops more self-confidence in them (Duffy 2013: 76). The role that employee empowerment plays in curbing inefficiencies arising from application of traditional systems is through continuous training and development of

employees (Duffy 2013: 76). Cook (2008: 3) states that, through training and coaching, the employees' knowledge, abilities and opportunities are increased.

The following section provides a detailed discussion of the results, setting and methodology of the studies that have investigated employee empowerment in relation to the implementation of kaizen costing. In addition to discussing the empirical studies, certain commentary articles as well as literature based on employee empowerment are also covered in the following section.

#### **2.4.3.1 Studies investigating employee empowerment**

An empirical study examining employee empowerment was conducted by Menon (2001) in Quebec and Ontario in Canada. In this study, the constructs of employee empowerment were measured using two types of samples. One type of the sample consisted of 355 part-time business students in Montreal's two French and two English universities. These students were also employed full time. The other type of the sample consisted of 162 employees in a financial services company based in Ontario, Canada. To collect data, survey methodology was employed and the research instrument used was a questionnaire. Stander and Rothmann (2009) conducted an empirical study examining employee empowerment in selected South African organisations. In this study, a cross-sectional survey design was used. Questionnaires were used to gather primary data in a non-random field survey from a total sample of 1 406 participants. The population consisted of employees at all levels of the organisation. The sectors from which the South African organisations were selected included manufacturing, chemical, mining, service, and government.

The main aim of Menon's (2001) study was to clarify the definitional and conceptual issues surrounding the employee empowerment constructs by proposing an employee-centered psychological approach. Menon (2001: 174) notes that employee empowerment comes in two dimensions; the 1<sup>st</sup> dimension being the action taken by management to empower employees, and the 2<sup>nd</sup> dimension being the process to such as delegation. In an attempt to clarify employee empowerment, the main constructs Menon (2001) came up with were perceptions of control, competence and goal internalisation. The perceived control in empowerment captures the traditional approach to employee empowerment advocated by a structural approach. Traditional

empowerment includes techniques such as delegation of authority and increased employee autonomy. Authority is given to employees, irrespective of their rank or status or gender, to make decisions pertaining to the power to control resources and having an effect on organisational outcomes (Menon 2001: 155 - 157). Goal internalisation mainly concerns the leadership approach entrusted to employee empowerment. This is what transformation leaders try to engender in their employees in achieving commitment to towards organisational goals and objectives. Goal internalisation follows a motivational approach, where empowerment is based on how determined an employee is in terms of accomplishing a task. It also involves leadership approaches where leaders are involved in ensuring that followers are being encouraged to participate in the transformation of the organisation for a greater cause. The key factors in this approach are closely related to the model that was tested for construct validity by Stander and Rothmann (2009). The perception of competency pertains to self-efficacy where an employee is believed to have the capabilities to mobilise motivation, cognitive resources, and the course of action required to achieve situational demands. The psychological empowerment model is explained in the study conducted by Stander and Rothman (2009) which is covered later in this section.

Menon's (2009) study, expanded from Conger and Kanungo's (1988) model, viewed empowerment as a process of psychologically enabling, primarily through the enhancement of a self-efficacy belief. Menon's (2009) study found that, besides the perception of competence in the work environment, individual employees are also psychologically enabled through perception of control over the work environment and goal internalisation, thus empowering them.

Menon's (2009) study clearly proves how the constructs, i.e. control over work environment, competence and goal internalisation, contribute to successful employee empowerment. Control over the work environment and competence, as theoretically conceptualised by Bagraim *et al.* (2007: 211) and Creed (2011: 111 - 113), play a major role in employee empowerment especially in the adoption of kaizen costing.

Stander and Rothmann (2009) identified the need for employees in South African organisations to proactively respond to the economic challenges facing South Africa, especially in the post-apartheid era. According to Stander and Rothmann (2009), the way to respond to this need is to build competences, resources and strategies to bring

about large-scale change that will help the country to cope with such challenges (Stander and Rothmann 2009: 196). This can be achieved if employees are psychologically empowered (Stander and Rothmann 2009: 196). Stander and Rothmann (2009) identified the gap in empirical studies that examined the psychological empowerment of employees in South Africa. Hence, Stander and Rothmann's (2009) study focused on examining the construct validity and reliability of a measurement instrument to assess psychological empowerment of employees in South Africa.

The results of Stander and Rothmann's (2009) study revealed that the four-factor model (including competence, meaning, impact and self-determination) to measure the psychological empowerment of South African employees in selected organisations fits the data best. In other words, the constructs, i.e., competence, meaning, impact and self-determination, proved to be the best measures for psychological empowerment. The meaning construct in the context of employee empowerment represents the state in which an employee feels connection to their work (Stander and Rothmann 2009: 197). This connection makes employees feel that their work is important to them. It also creates a sense of care in what they are doing about their work (Stander and Rothmann 2009: 197). The competency construct reflects the abilities and skills that an employee possesses. These can be demonstrated through performing a given task within the minimum or beyond a given standard (Stander and Rothmann 2009: 197). The self-determination construct reflects a sense of freedom where the employees are able to select appropriate methods or procedures to perform given tasks in the organisation (Stander and Rothmann 2009: 197). The impact construct relates to the belief an employee has about being able to influence outcomes in a system or at work within the organisation (Stander and Rothmann 2009: 197).

Stander and Rothmann (2009) concluded that, since the four-factor structure of the psychological empowerment construct as well as the internal consistency of the subscales were confirmed, the study could serve as a standard. Stander and Rothmann (2009) also pointed out that service and government in South African organisations lack understanding and knowledge of principles of leader empowerment behaviour and organisational supports. It was also noted that the service and government organisations lack specific programmes which are aimed at enhancing the perceptions of employee empowerment. However, responding to the challenges faced by these organisations

relies heavily on employee empowerment. Hence, Stander and Rothmann (2009) recommendations were as follows: training in terms of leader empowerment behaviours and organisational support should be advocated in service and government organisations; programmes to enhance perceptions of employee empowerment should be developed; and designing programmes that will make employees perceive their actions at work as making a difference should be encouraged in order to make employees feel more empowered.

Empirical evidence of the four constructs, i.e. competence, meaning, impact and self-determination, which make up the measurement of employee empowerment was highlighted by the findings of Stander and Rothmann (2009). These constructs, theoretically conceptualised by several authors (Collier 2012, Drury 2008, Kaur 2014, Bagraim *et al.* 2007, Creed 2011 and Cook 2008) have proven to be major antecedents of employee empowerment. These constructs are thought to be crucial attributes for employee empowerment toward successful adoption of kaizen costing (Collier 2012: 362, Drury 2008: 544, and Kaur 2014: 2).

Stander and Rothmann (2009: 197) find that most authors discussing the measurements of the empowerment of employees share the same theoretical basis, i.e. control and competency. This is also evidenced in Menon's (2001) study where competence, control and goal internalisation are identified as the best constructs to measure employee empowerment. It is also evidenced in Men and Stacks's (2013: 175) study, where organisational leadership and empowerment behaviour were examined. It can be concluded in Men and Stacks's (2013) study that the psychological empowerment of employees holds that employees feel empowered if they possess the skills and have the ability to do the job they are employed for.

It is clear that, although the organisational culture and leadership styles play an important part in successful implementation of kaizen costing, the crucial attributes for the successful implementation of kaizen costing are mainly linked to the constructs of employee empowerment. Stander and Rothmann (2009: 197) maintain that and further state that some of the internal environment factors, such as organisational culture and leadership styles, are identified as antecedents of employee empowerment.

#### **2.4.4 Internal environment challenges of implementing kaizen costing**

A number of studies (Marin-Garcia, Del Val and Martín 2008, Modarress, Ansari and Lockwood 2005, Rof 2011, and Williamson 1997) examine the adoption of kaizen costing, but very few studies are explicit about the challenges of implementing kaizen costing with the internal environment. Hence, this section assesses the implementation of kaizen costing challenges in the internal environment.

Wu and Chen (2006: 702-703) assert that lack of initiatives from employees is due to unattractive promotions. Wu and Chen (2006: 702-703) further state that a lack of skills in solving problems is also a challenge with implementing a continuous improvement tool. Manos (2007: 47-48) agrees with Wu and Chen (2006) but further states that resistance to change is mostly likely to cause the implementation of kaizen costing to fail. Employees may increasingly find it difficult to come up with new ideas to improve on a continuous basis (Marin-Garcia, Del Val and Martín 2008: 59). Marin-Garcia, Del Val and Martín (2008: 59) further state that employees might come up with very good ideas but the organisation might fail to implement them. Empowerment of employees is key to the application of kaizen costing since employees are assumed to have greater insight than managers on how product costs can be reduced (Drury 2008: 544). Therefore, organisations that are not supportive of lower level employees may find it difficult to implement kaizen costing (Collier 2012: 362). The challenges associated with employee empowerment may also include deficiencies as there may be no uniformity in and positive results from decisions taken by employees (Groen, Wouters and Wilderom 2012: 125). Collier (2012: 362) adds that kaizen costing application also relies on teamwork, and hence it may also pose a challenge for an organisation that relies heavily on individualism in its operations and processes.

Al Smadi (2009: 209) points out that lack of adherence to a code of ethics and the creation of a culture for continuous improvement within the organisation is likely to be the cause of the unsuccessful adoption of kaizen costing. Al Smadi (2009: 209) further adds that when implementing kaizen costing, only resources available are used to implement continuous improvements. If the organisation implementing kaizen costing is not fully acquainted with the theory of constraints, kaizen costing will not succeed (Watson, Blackstone and Gardiner 2007: 389). The theory of constraints refers to

restrictions in a system that prevents the system from achieving full capacity of its desired outcomes (Rahman 1998: 336-337).

The behaviour of employees with regard to change is likely to be negative (Groen, Wouters and Wilderom 2012: 125), thus underpinning that the theory of planned behaviour is essential. The theory of planned behaviour states that motivation and ability to do something are the key determinants of achievement (Conner and Armitage 1998: 1429).

Since the internal environmental factors are easily controllable compared to the external environmental factors, the challenges associated with implementing kaizen costing can be easily overcome (Al Smadi 2009: 209). Although the abovementioned challenges may be experienced in the application of kaizen costing, the opportunities thereof supersede such challenges. The following section discusses opportunities within the internal environment that are associated with the application of kaizen costing.

#### **2.4.5 Internal environmental opportunities for implementing kaizen costing**

The application of kaizen costing in the organisation is people-oriented and involves everyone from the shop floor employees to top management (Berger 1997: 111). It can therefore be applied to reduce costs associated with any process or system (Bertodo 1993: 300). It may also be applied to improve productivity, quality of product and services, product design and product development (Aoki 2008: 530). Aoki (2008: 530) further mentions that kaizen costing is best suited for an organisation that strives for zero defects in its products and services, systems, processes, and activities. Wu and Chen (2006: 702) mention that there are a lot of kaizen costing opportunities associated with the factors or events that occur within the organisation. One of them includes using kaizen costing to facilitate employee training programme in the future (Wu and Chen 2006: 702). Wu and Chen (2006: 702) further assert that improvement cases can also be used as initiatives to promote creativity and innovation among employees. Jayeola, Sokefun and Oginni (2012: 103) concur with Wu and Chen (2006: 702) and further affirm that even unexpected losses and waste in the organisation would be eliminated through the application of kaizen costing. According to Manos (2007: 47-48), kaizen costing fosters the culture of teamwork among employees and departments within the organisation and, as a result, synergy is realised. This improves the growth potential of



a product or service line of the organisation and market share of the organisation as whole (Manos 2007: 48).

Opportunities associated with organisational culture are that through application of kaizen costing, employees find meaning and purpose in their work and are united with a common purpose, which in turn leads to a desire to work as a team and be part of the organisation (Burns *et al.* 2013: 492). Employee commitment to the organisation increases as employees are given the opportunity to take decisions towards achievement of the organisational goals. This brings out the best in employees and, therefore, improves their productivity. They work together with a common goal which is to achieve the organisational goals (Burns *et al.* 2013: 492). As kaizen costing embraces the sense of value placed by an organisation in its employees, it makes employees want to make positive contributions to the way an organisation operates (Collier 2012: 364).

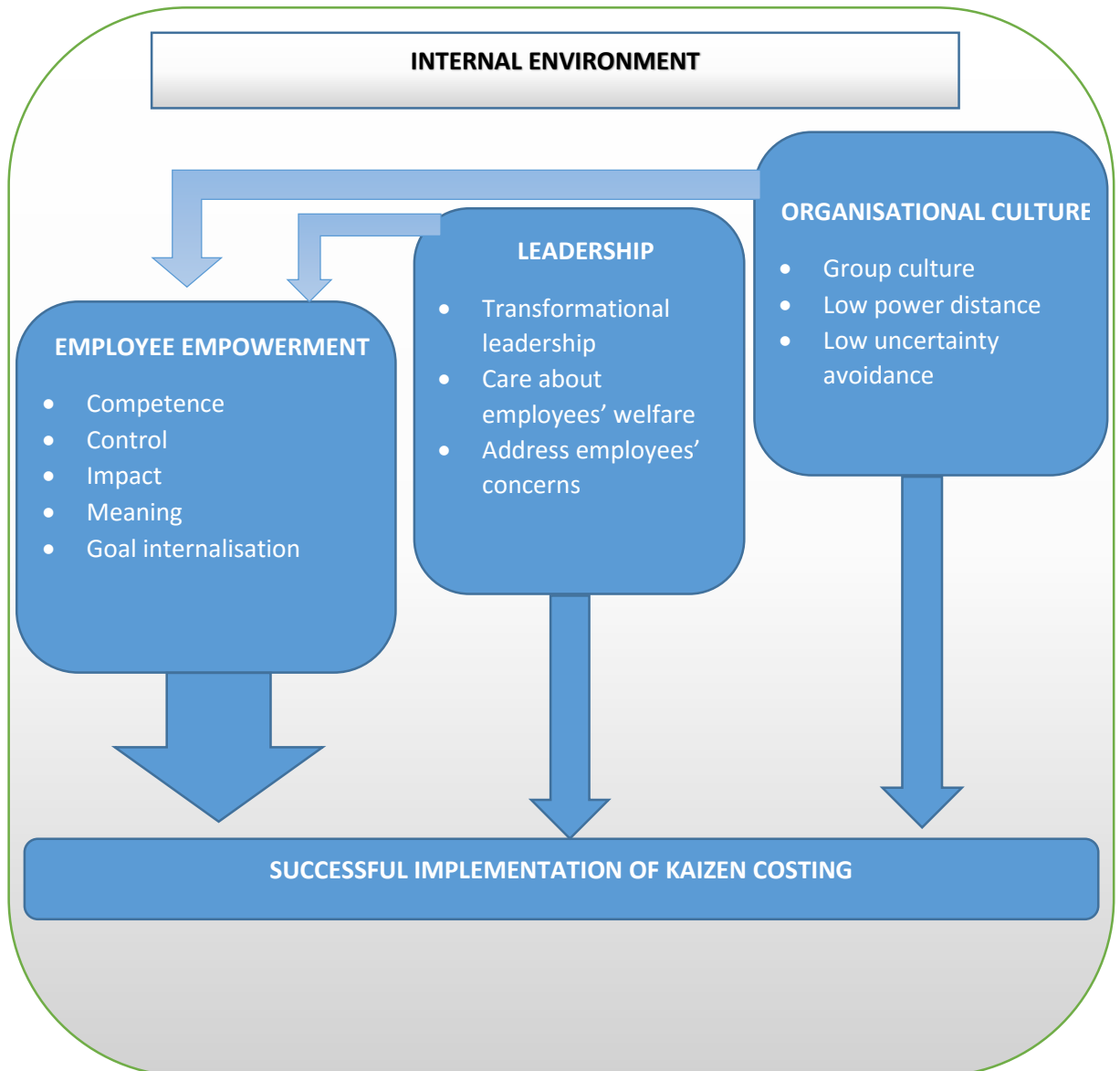
Aoki (2008: 530) notes that opportunities that can be exploited through the implementation of kaizen costing which are associated with leadership in the organisation include morale and motivation in employees. Easy work processes will be sustained by good leadership since kaizen costing strives to make practices, processes and operations effective and efficient (Manos 2007: 48).

Since kaizen costing is made of a multiplicity of methods and contexts, this means that it is highly versatile both as a concept and a technique. This means that it is easily customisable to suit any organisation's cost management structures or processes that are intended to be improved (Collier 2012: 364). Hence, it is hoped that its application in the South African municipalities may include reduction of losses, improve the efficiency in service delivery and, as a result, reduce the service delivery protests caused by poor service delivery.

This section has focused on the internal environment, within the context of implementing kaizen costing. The main areas of the internal environment, i.e. organisational culture, leadership, and employee empowerment were discussed in this section. The theoretical background and empirical studies addressing organisational culture, leadership, and employee empowerment were also covered in this section. The attributes for successful implementation of kaizen costing are mainly addressed by internal environment factors. The perceived internal environmental disadvantages of implementing kaizen costing were also addressed. The perceived disadvantages and the

attributes of implementing kaizen costing address the third objective of this study, i.e. to determine whether employees at eThekweni municipality would accept the implementation of kaizen costing. The determinants of the internal environment covered for the purposes of this study are summarised in the following conceptual framework (Figure 2.1).

**Figure 2.1.: Internal Environment Framework**



Source: Self-generated

The following section discusses the market environment within the context of implementing kaizen costing.

## **2.5 Kaizen costing and the market environment**

The market environment is directly associated with factors such as purchasing and distribution, customer demands and expectations, product value engineering, competition, and change within which the organisation operates (Badenhorst-weiss, *et al.* 2013: 112). However, its main focus is based on maintaining a successful relationship with customers (Badenhorst-weiss *et al.* 2013: 112). Smit *et al.* (2013: 67) concur with Badenhorst-weiss *et al.* (2013: 112) and further add that the market environment also includes labour unions, and substitute or new products, which all centre on competition. Smit *et al.* (2013: 68) also emphasise that the market environmental factors are harder to control and predict. The market environment also forms part of the factors that determine the external environment (Badenhorst-weiss *et al.* 2013: 112). However, for the purposes of this study, the focus is on exploring the market environment within the context of implementing kaizen costing. Although some of the market environmental factors are associated with competition, this study does not focus much on such factors because its setting is not significantly affected by competition.

Rothwell (2010: 1) argues that rapid changes in the business environment are faster than the adjustment to them by organisations. The markets within which South African organisations operate are greatly affected by the socio-political context of South Africa (Ehlers and Lazenby 2010: 140). The socio-political context of South Africa involves factors such as economic inequalities, high rates of crime and violence, and high expectations of dramatic changes (Ehlers and Lazenby 2010: 140). Furthermore, South African organisations operate in an uncertain market environment that is essential to understand in order to compete in a global environment (Govender 2009: 364). These are the market forces that require organisations to respond to in order to stay ahead of the competition and remain competitive. Hence, Friedman (2005: 1) asserts that organisations should adopt new and advanced management approaches to do business. Friedman (2005: 1) further mentions that the organisations that cannot keep up with changes in its market environment are doomed to fail.

As municipalities are not immune to the ever changing market forces, they are also required to adopt advanced modern management approaches to do their business. South African municipalities should learn that inflexibility and failure to respond effectively

to challenges could lead to losses (The National Treasury 2015: 5). Hence, Pillay, Steyn and Sommerville (2013) emphasise that, in a fast-changing environment, South African municipalities should be flexible to change and adapt modern management approaches.

The aspects of kaizen costing that form part and parcel of the market environment include purchasing and distribution (Collier 2012: 362), considerations of customer satisfaction in relation to kaizen application (Drury 2008: 538), product value engineering (Williamson 1997: 22), how kaizen costing impacts on the competitiveness of an organisation (Rof 2011: 108), kaizen based competition and its role on globalisation (Savolainen 1999), and most importantly, how kaizen costing impacts on managing the nature of change in which the organisation operates (Mitchell, Nørreklit and Jakobsen 2013).

The relationship between kaizen costing and the market environment is further assessed in terms of customer satisfaction. Lastly, a section on customer demands in municipalities is discussed.

### **2.5.1 Kaizen costing and customer satisfaction**

The main focus of kaizen costing is to ensure that the customer expectations and demands are met while maintaining the profitability of the product or service (Bhuiyan and Baghel 2005: 763). Bhuiyan and Baghel (2005: 765) further assert that continuous improvement methodologies are used to provide greater value to the customers. Studies (Sani and Allahverdizadeh 2012 and Bhuiyan and Baghel 2005) have made it clear that profit driven organisations are obliged to relook at the way they account for costs in order to outsmart their competitors and keep up with the ever changing customer demands. Although these studies (Sani and Allahverdizadeh 2012 and Bhuiyan and Baghel 2005) provide aspects of customer perspective when it comes to kaizen costing, there still exists a gap as to what extent kaizen costing application in non-profit driven organisations satisfy customer demands or whether kaizen costing is applicable at all in an attempt to meet customer demands.

Kaizen costing also involves collaboration between departments within the organisation (Collier 2012: 348). According to Al Smadi (2009: 204), in kaizen costing, customers are categorised into two types, i.e. internal customers and external customers. Internal

customers are the department that uses the services or products supplied by another department within the organisation. External customers are the final customers that the organisation exists to serve. In order to ensure that both internal and external customers of the organisation are better served, as well as creation of value to the customers through efficient management of business process, organisations have broadened cost management systems (Hansen and Mowen 2006: 5).

Hansen and Mowen (2006) further state that cost management plays an important role in identifying activities that are important in customer satisfaction. Such activities include quality and delivery performance of the product and environmental performance (Jayeola, Sokefun and Oginni 2012: 103). Jayeola, Sokefun and Oginni (2012: 103) further highlight that customers are demanding high quality products and services at a lower price. Hence, one of the objectives of implementation of kaizen costing is to ensure that customer requirements in terms of quality, competitive price and functionality of the product sold or service provided are met (Sani and Allahverdizadeh 2012: 41; Modarress, Ansari and Lockwood 2005: 1751; and Al Smadi 2009: 204).

The results of Rof's (2011) study reveals that kaizen costing is concerned with enhancing the quality and value of the services provided by the organisation which, in turn, improves the financial stability and competitiveness of the organisation. All these improvements are aimed at customer satisfaction through the involvement of all employees within the organisation (Rof 2011: 104). Singh and Singh's (2009: 56) study finds that kaizen can be applied to attract new customers and maintain good relationships with existing customers. Al Smadi (2009: 204) alludes that companies adopt a kaizen strategy to improve performance in terms of quality because the customers make their buying decisions based on quality and other factors.

### **2.5.2 Customer demands in municipalities**

The Durban eThekweni Municipality (2011b: 33) notes that there is a need to improve service delivery to satisfy the following needs of citizens in the eThekweni communities: rural development/agrarian reform and food security, creating decent work and economic growth, fighting crime, education, health and nation building and good governance. In the eThekweni Municipal Integrated Development Plan 2014/2015,

service delivery was identified as a major problem in the day to day operations of the municipality (The Durban eThekweni Municipality 2014: 22). This shows that service delivery by the municipality to its customers has been consistently deficient.

In terms of satisfying customers, implementing kaizen costing is to ensure that the product or service is provided at the right time (Leseure, Hudson-Smith, Suárez-Barraza and Ramis-Pujol 2010: 391). Leseure *et al.* (2010) further state that the organisation's strategic objectives are centred on complying with customer requirements and expectations. This is evidenced from the mission and vision of the municipalities in South Africa where it states clearly that the focus of the municipality is to ensure effective service delivery responsive to the needs of the community (Department of Cooperative Governance and Traditional Affairs 2014: 11).

According to Khoza (2005: 291), the inefficiency problems that South African municipalities face result from the application of scientific management which assumes that each function within the organisation is independent of other functions. Unfortunately, this aspect of the cost management problem has not been explored in the South African context. Studies which focused on municipalities are Khoza (2005) and Pillay, Steyn and Sommerville (2013). However, these studies did not focus on kaizen costing implementation.

Kaizen costing is continuous because after the product has been introduced, customers tend to demand an improvement in value of that product (Williamson 1997: 23). Williamson (1997) further indicates that kaizen is all about giving customers what they want, but also ensuring that the organisation is making a profit and is competitive.

In this section, the links between kaizen costing and market environment factors were covered. The role that is played by kaizen costing towards customer satisfaction was also covered. Lastly, the demands and requirements for customers with which municipalities have to cater for were also covered in this section. Since the connection between kaizen costing and the internal and market environmental factors has now been established, it is necessary to assess how staff perceive the implementation of kaizen costing. The following section explores staff perceptions of kaizen costing implementation.

## **2.6 The implementation of kaizen costing**

The implementation of kaizen costing requires dedication from both managers and employees towards continuous improvements (Liker and Franz 2011: 30). The benefits of kaizen costing must be explained and understood by all stakeholders involved in its implementation. For the implementation of kaizen costing to work, employees and managers must approach it with an open mind (Al Smadi 2009: 211). As there may be a significant departure from normal practices, the duties and responsibilities should be constantly explained to staff (Liker and Franz 2011: 30). Employees need to be encouraged to give kaizen costing a chance for it to make it work. Gopalakrishnan (2006: 23) supports this and further states that implementation of kaizen costing requires employees and management to be motivated towards executing their tasks at work.

Bhuiyan and Baghel (2005: 763) state that implementing kaizen costing also requires staff to justify their actions or suggestions intended for improvements. Liker and Hoseus (2008: 12) concur with Bhuiyan and Baghel (2005) and further state that it should also be made clear to staff that their justifications for actions or suggestions for improvements are not intended to measure or judge their performance, but to improve productivity. However, Liker and Hoseus (2008: 12) state that evaluation of employee performance should be conducted on continuous basis. A culture of treating mistakes as learning opportunities for future improvements should be adopted in order to implement kaizen costing successfully (Liker and Franz 2011: 31). Liker and Franz (2011: 30) further state that a common understanding of the benefits brought about kaizen costing facilitates a smooth implementation process. Singh and Singh (2009: 54) argue that perceptions of employees about kaizen costing are only developed after they are taught about the essentials of lean thinking. Lean thinking in the context of implementation of kaizen costing requires employees to embrace new ways of thinking pertaining to creation of value while eliminating waste, and using less resources while meeting and exceeding customer needs (Womack and Jones 2010: 15). However, the task involved in implementing kaizen costing may be perceived as too laborious by employees if there is no or rather lack of support from a team champion or superiors (Singh and Singh 2009: 54). Therefore, the process of implementing kaizen costing is likely to be abandoned (Al Smadi 2009: 211).

Several authors (Marin-Garcia, Del Val and Martín 2008; Womack and Jones 2010; Rof 2011; Williamson 1997) have reviewed the literature on implementation of kaizen costing but their main focus was on manufacturing organisations.

### **2.6.1 Studies investigating the implementation of kaizen costing**

A number of studies investigate the implementation of kaizen costing. The following discussion first sets out the background to each study, and then discusses the results of each study.

An experimental empirical case study investigating the implementation of kaizen costing was conducted by Modarress, Ansari and Lockwood (2005) in Washington, USA. This study was conducted in Boeing Commercial Airplane Company in the Interiors Responsibility Center Division. A longitudinal empirical case study design applying a qualitative research approach was conducted by Savolainen (1999) for a period of 15 years from the early 1980s to the mid-1990s. This study was conducted in one medium-sized company in the metal industry and another, larger group in the construction and concrete industry located in Finland. The main purpose was to discuss the processes and dynamics of implementing kaizen costing initiatives conceptually and empirically. Another empirical study was that conducted by Okoye, Egbunike and Meduoye (2013: 121) in Anambra State, South-Eastern Nigeria. This study consisted of a sample size of 60 respondents comprising accountants across product and service sector organisations. The purpose of this was to assess accountants' perceptions of cost management via the kaizen costing system. Lastly, an empirical study conducted in Nigeria was that of Jayeola, Sokefun and Oginni (2012). This study's aim was to examine whether the profitability of Small and Medium-sized Enterprises (SMEs) in Ogun State can be improved by applying kaizen costing. The data for this study was collected from a sample of 269 respondents through questionnaires.

The results of Modarress, Ansari and Lockwood's (2005) study indicate that implementing kaizen costing in Boeing Commercial Airplane Company in the Interiors Responsibility Center Division has helped it to reduce cost, improve quality, reduce product cycle time, and increase flexibility on the factory floor. It also found that implementing kaizen costing in this company has provided it with relevant cost data to support lean production decisions that would be useful to its practitioners. Modarress,



Ansari and Lockwood (2005) also found that successful implementation of kaizen costing depends on close corporation between management and employees. Furthermore, the cost reduction targets must be understood and accepted by all parties involved in kaizen costing for its implementation to be successful.

Savolainen's (1999) study reveals that there is no one way to implement continuous improvement, it varies by organisation. However, the major factors that are likely to be common in the implementation of continuous improvements are organisational factors, such as managerial choices and environmental forces (Savolainen 1999: 1217). Although this study provides a good example for implementation of kaizen costing initiatives, it did not focus on the public sector, particularly municipalities, and was solely based on organisations that are primarily driven by factors such as competition, globalisation and profit.

The Okoye, Egbunike and Meduoye (2013) study reveals that the staff believe that cost reductions and profit maximisation throughout the product life cycle will be achieved through the implementation of kaizen costing. Furthermore, through implementation of kaizen costing, it found that manufacturing firms in Nigeria would be provided with strategies that will be useful to reduce costs associated with material usage and procurement and labour utilisation in the production processes. This study also finds that implementing a kaizen oriented culture in an organisation would provide employees involved in production with strategies for product improvement during the design and manufacturing process. In addition, such strategies would also enhance the quality towards addressing customer requirements and improve the future revenue profile of the organisation. Therefore, it suggested that kaizen costing be implemented in Nigerian manufacturing organisations to improve their cost management. However, its implementation should not be done in isolation; it should be incorporated into the corporate strategy of the organisation.

The results of Jayeola, Sokefun and Oginni's (2012) study reveal that the profitability of the SMEs in Nigeria, Ogun State, improved through the application of Kaizen costing. Their results also indicate that most organisations that apply kaizen costing are more successful in terms of profitability as well as surviving competition through cost management. This study, as well as that of Okoye, Egbunike and Meduoye's (2013),

are good examples of the implementation of kaizen costing in the African context although their focus was also not on public sector organisations such as municipalities.

The following section discusses the South African municipalities, especially the eThekweni Municipality, in relation to their cost management challenges. These challenges are discussed in context of the ability of a kaizen costing application to curb these challenges.

## **2.7 Kaizen costing and the South African municipalities**

The Department of Cooperative Governance and Traditional Affairs has acknowledged that it is necessary for South African municipalities to review their cost management challenges in order to be efficient, effective, responsive and that value for money is achieved with the allocated public resources (Department of Cooperative Governance and Traditional Affairs 2009: 5 – 6). Pillay, Steyn and Sommerville (2013) and Khoza (2005) are in agreement with the view of the Department of Cooperative Governance and Traditional Affairs and further identified that South African municipalities are not immune the challenges to respond the turbulent environment facing the 21<sup>st</sup> century organisations. However, the cost management approaches currently applied in South African municipalities are traditional (Khoza 2005). Traditional costing systems are no longer relevant in the modern economy because they focus on cost containment rather than cost reduction (Drury 2008: 536). Atkinson, Kaplan and Matsumura (2012: 273) agree with Drury (2008) and further assert that kaizen costing is an essential mechanism that makes a business stay competitive and meet or exceed customer expectations. Jayeola, Sokefun and Oginni (2012: 105) have identified kaizen costing as a mechanism that can be used to affect and maintain efficiency and effectiveness in the allocation and utilisation of organisational resources. Jayeola, Sokefun and Oginni (2012: 106) further state that the result of poor cost control is that performance measurement bases are biased.

The survey conducted by the Department of Cooperative Governance and Traditional Affairs reveals that poor cost controls have a direct negative impact on service delivery (Department of Cooperative Governance and Traditional Affairs 2009). Although the main purpose of South Africa municipalities is to ensure that all citizens are provided

with the basic services, the costs at which services are provided should be efficiently and effectively managed (Department of Cooperative Governance and Traditional Affairs 2014). Williamson (1997: 22) states that kaizen costing is the best cost management technique that can be applied by any organisation to manage costs. In addition, kaizen costing can be applied in any section of the organisation to reduce and manage cost through continuous small increased efficiencies in production or service processes (Drury 2008: 543). Williamson (1997: 22) further asserts that substantial cost reductions are achieved through focusing on the purpose that the product serves.

Although the eThekweni Municipality is one of the competent municipalities of South Africa in terms of service delivery, its cost management is poor (The Durban eThekweni Municipality 2014). Since the eThekweni Municipality is a metropolitan municipality, it is more exposed to the ever changing customer demands. Maintaining services infrastructure in a cost-effective and sustainable manner as well as dealing with competition are crucial factors that exist in metropolitan municipalities (Wallis 1994: 41). Choi (1995: 615) states that in order for an organisation to meet customer demands and survive in a competitive environment, implementation of kaizen costing is essential. Choi (1995: 615) further asserts that costs as well as risks related to changes as a result of continuous improvement implementation are very minimal. Modarress, Ansari and Lockwood (2005: 1753) state that for implementation of kaizen costing to be successful, members involved in the execution of kaizen costing should be held responsible for their actions and conduct kaizen costing practices in a consistent and repeatable way.

For any business sector that is in need of improvements in any function, kaizen is the solution (Singh and Singh 2009: 53). Williamson (1997: 23) affirms that a series of other kaizen activities is essential for kaizen costing to be successful. Controls in public sector organisations are determined by political forces whereas in the private sector, controls are determined by market forces (Parker and Bradley 2000: 130). Parker and Bradley (2000) further note that management approaches that are aimed at continuous improvements and aligned to accommodate market forces such as competition, customer demands and shareholder interests tend to fail if applied in public sector organisations since public sector organisations are not driven by these market forces. Furthermore, Verbeeten (2011) notes that modern cost management approaches are not widely used by public organisations because they are not required by legislation to do

so and funding is based on the use of traditional cost management approaches. Contrary to Parker and Bradley (2000) and Verbeeten (2011), the Public Finance Management Act 1 of 1999 provides that all public entities, including municipalities, modernise the systems of financial management in order to ensure that costs are managed efficiently and effectively. The Parliament of the Republic of South Africa enacted the Municipal Finance Management (MFMA) Act 56 of 2003 in order to ensure that the objectives of Public Finance Management Act 1 of 1999 are tailored to the functions of the municipalities.

In spite of the existence of the Public Finance Management Act 1 of 1999, MFMA and other Acts, Pillay, Steyn and Sommerville (2013: 117) maintain that, due to the current political structures, employees are of the opinion that service delivery takes priority over cost management and implementing a cost management system will require additional resources. In addition to this, Khoza (2005) notes that although the provincial government provides for assistance of local governance in terms of financial management as per section 36 of the MFMA, its main focus is on budget control and variance analyses. Pillay, Steyn and Sommerville (2013: 110) further note that there is lack of assessment in the viability of project costs in South African municipalities since revenues are allocated to municipalities regardless of whether work is done or not, or at what cost, and whether or not those costs have been improved compared to prior years. In addition, the results of the Pillay, Steyn and Sommerville (2013: 117) study indicate that cost management in South African municipalities is only the responsibility of project managers and quality surveyors.

Since the sample of the respondents selected for this study is not based on the entire eThekweni Municipality, the following section provides an overview of the departments that were selected to be studied for implementation of kaizen costing. The overview is based on the vision, aims, challenges and certain financial aspects of each department.

## **2.8 EThekweni Municipality departments selected for this study**

The eThekweni Municipality has eighteen departments in total. The Electricity and Water and Sanitation Departments were selected to be assessed for the possible implementation of kaizen costing. Among other departments, these two departments are

significantly affected by the cost management challenges that the eThekwini Municipality is experiencing (eThekwini Municipality Integrated Development Plan 2014: 367). These challenges are not only experienced in the eThekwini Municipality; the rest of the South African municipalities are also experiencing them too (Department of Cooperative Governance and Traditional Affairs 2009: 55). It is hoped that, by implementation of kaizen costing in these departments, these challenges will be curbed. Thereafter, if successfully implemented, kaizen costing may be applied to other departments in eThekwini Municipality as well as all South African municipalities. A brief overview of each department that was selected for this study is provided below.

### **2.8.1 Water and Sanitation Department**

The Water and Sanitation Department's vision is that, by 2030, all citizens of eThekwini Municipality are provided with world class water and sanitation services (The Durban eThekwini Municipality 2011c). The Water and Sanitation Department intends to be achieve this vision through provision of water and sanitation services in an effective and efficient manner. In addition, this department also intends to maintain the affordability and sustainability of its services. Most importantly, this department intends to provide its services in a customer friendly manner (The Durban eThekwini Municipality 2011c).

The aim of the Water and Sanitation Department is to provide basic water supply and sanitation services to all the eThekwini Municipality citizens (The Durban eThekwini Municipality 2011c). Furthermore, it aims to ensure that the services provided by this department are appropriate, acceptable, safe and affordable. It is also the intention of this department to educate all citizens within the eThekwini Municipality about the sustainable and healthy use of water and sanitation services (The Durban eThekwini Municipality 2011c). This department further intends to get all citizens informed about the efficiency and effectiveness, affordability and equitable distribution of its services (The Durban eThekwini Municipality 2011c).

The Water and Sanitation Department provides its services to 945 910 households in formal areas and 64 352 households in informal areas (The Durban eThekwini Municipality 2016). This department contributes significantly to the revenue of eThekwini Municipality as a whole.

The major challenge that the Water and Sanitation Department faces is the effect of the drought that happened during the 2015/2016 financial year. This has resulted in serious water leakages and pipe bursts as the pressure to pump water has been decreased to control the supply of water. This has also significantly reduced sales from supply.

### **2.8.2 Electricity Department**

The vision of the Electricity Department is to be ‘a leader in electricity distribution providing energy for the future’ (The Durban eThekweni Municipality 2011a). This vision is to be achieved through provision of all energy services within the spectrum of the Electricity Department in order to satisfy all energy services customers whilst maintaining sound business principles (The Durban eThekweni Municipality 2011a). This department intends to strategise the development of an electricity unit which will undertake to make effective use of and maximise the value of all its resources.

This department is responsible to supply electricity services to more than 734 000 customers within the eThekweni Metropolitan Region and some adjacent areas (The Durban eThekweni Municipality 2016). This provision is just over 5% of electricity that the eThekweni Municipality purchases from total energy generated by Eskom. This contributed approximately 43% (R12.5 billion out of the total of R29 billion) of revenue towards the total revenue for eThekweni Municipality as whole in the 2015/2016 financial year (The Durban eThekweni Municipality 2016).

The Electricity Department has sub departments, i.e. Commercial, High Voltage Operations, Customer and Retail Services, Human Resources, Medium Voltage/Low Voltage Operations and Technical Support, that report to the head of this department. The financial management of these departments are handled at the eThekweni Municipality Finance Department (The Durban eThekweni Municipality 2016).

The major challenge faced in this Electricity Department is outages in energy supply. This challenge is exacerbated by the theft of electricity and infrastructure. Although insurance against theft of this nature has been provided for by this department, the losses far surpasses the insurance claims against theft each year. This department has put numerous measures in place to curb this scourge, but the problem prevails (The Durban eThekweni Municipality 2016).

## 2.9 Summary

This chapter firstly covered the background of South African municipalities. This section included a brief overview of operating systems of the South African municipalities. It further discussed the main legislation that governs the cost and financial management of the South African municipalities.

Secondly, it focused on the theoretical aspects of kaizen costing. This section included the nature and definition, characteristics and advantages of kaizen costing. The relationship between kaizen costing and cost management was also explored in this section.

It then continued to explore the two main environments, i.e. internal environment and market environment, within which kaizen costing is applied. The factors covered in the internal environment within the context of kaizen costing and for the purposes of this study included organisational culture, employee empowerment and leadership. The main aspects of the organisational culture discussed in this section are norms and beliefs which normally determine how things are done in the organisation. The aspect of leadership culture and leadership styles, i.e. transformational leadership and transactional leadership, were discussed in context of kaizen costing. Transformational leadership is found to be more suitable for implementation of kaizen costing successfully. The literature also indicated that successful implementation of kaizen costing relies heavily on employee empowerment. This section further outlined the internal environment challenges and opportunities. Although the challenges discussed in this section may hinder the success of implementing kaizen costing, the literature indicated that these challenges may be overcome since kaizen costing is flexible in terms of customisation to suit organisational requirements. The discussion for internal environment factors showed that organisational culture is the major determinant in the application of kaizen costing.

This chapter further explored the market environmental factors that are applicable in implementation of kaizen costing. These factors included the aspects of customer satisfaction and customer demands in municipalities. Based on the market environment, the literature indicated that customer satisfaction as well as maintaining competition are the driving forces behind the application of kaizen costing.

Although the internal and market environments are dominant in this chapter, the other aspects of kaizen costing such as exploration of literature based on implementation of kaizen costing was also covered. Many studies that have assessed the implementation of kaizen costing showed that it is mainly applied in the manufacturing sector. The information based on the implementation of kaizen costing was then assessed in the context of South African municipalities. Although certain challenges may be experienced when implementing kaizen costing in South African municipalities, the literature showed that it is possible to implement it successfully. The literature review has also shown that a knowledge gap exists with regards to the implementation of kaizen costing in a municipal setting. This research will fill that gap.

Lastly, this chapter provided an overview of the sample departments, i.e. the Electricity Department and the Water and Sanitation Department, that were selected at the eThekweni Municipality for the purposes of this study.

The discussion in following chapter covers the explanation of the research approach adopted for this study, the description of the methods applied to collect data, and the logic behind the chosen research methods used in this study.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

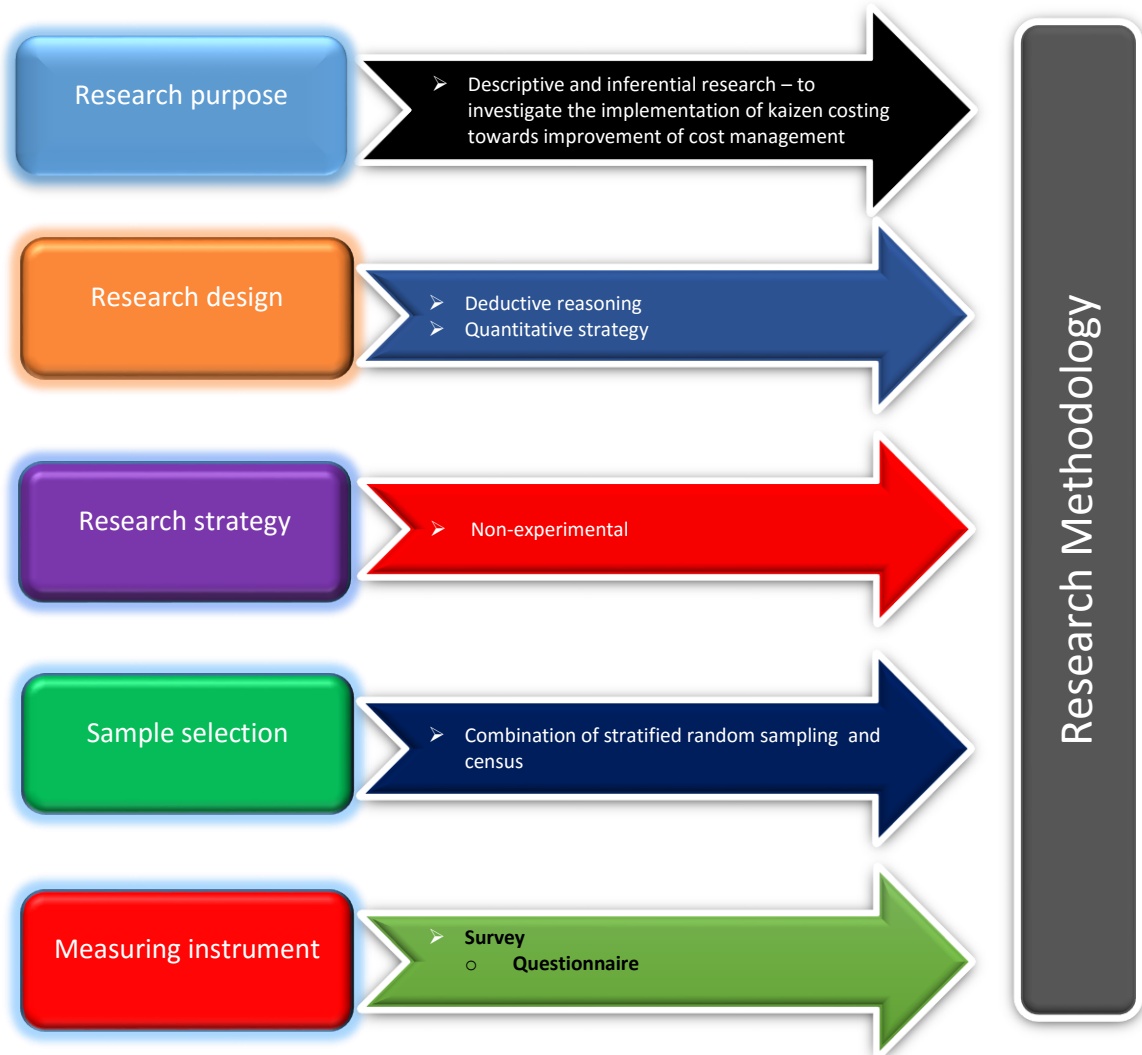
The previous chapter discussed the literature review pertaining to the implementation of kaizen costing in order to improve cost management in the Water and Sanitation and Electricity Departments in the eThekweni Municipality. As mentioned previously, the eThekweni Municipality has had some difficulties associated with cost management in the Water and Sanitation and Electricity Departments. Consequently, the losses in both Water and Electricity Departments increased significantly from the year 2010 to 2013 (The eThekweni Municipality Integrated Development Plan 2012: 298-299; The eThekweni Municipality Integrated Development Plan 2013: 331-333; The eThekweni Municipality Integrated Development Plan 2014: 367). Although the Municipality has tried to address this issue, the problem remains. The objective of this study is to assess the implementation of kaizen costing towards improving cost management in the Water and Sanitation and Electricity Departments at the eThekweni Municipality.

This chapter outlines the research methodology employed to conduct this study. The research methodology explains the research approach, stating the methods applied to collect data, justifying why methods applied in the study are appropriate, and stating what other methods could have been used and why were they not used (Kothari 2004: 21). In contrast, research methods are tools and techniques such as reports, observations, card sorts, laddering, repertory grids, interviews, face to face interactions, and questionnaires that are used to collect data (Rugg and Petre 2007: 93). Hence this chapter provides the logic behind the chosen research methods used in order to assess whether implementing kaizen costing can improve cost management in the Water and Sanitation and Electricity Departments in the eThekweni Municipality.

This chapter first covers an outline of the research objectives. Secondly, the discussion on research paradigm and methods used in this study follows. Subsequently, a description of the methodological approach adopted for this study follows. Then the definition of the population and description as well as discussion of the sample and sampling method sample follow. This is then followed by a discussion based on the actual instrument that was used for this research. Deliberations on the instrument used

for this study are followed by the description on how the data was gathered using the instrument. Subsequently, the response rate is discussed followed by a description of how data was prepared and analysed. This is followed by a discussion on the limitations identified and potential weaknesses of this study relating to the methodology, sampling, analysis, and methods. Lastly, the description of reliability and validity in the context of this research are discussed. The methodology employed in this study is summarised in Figure 3.1 below.

**Figure 3.1: Conceptual framework for research methodology of this study**



Source: Adapted from Gupta and Gupta (2011: 3)

### **3.2 Research objectives**

The aim of this study is to determine the perspectives of managers and non-managers as to whether the implementation of kaizen costing will improve cost management at the Water and Sanitation and Electricity Departments of the eThekweni Municipality. Therefore, the question that this study intends to answer is ‘what are the perspectives of managers and non-managers towards implementing kaizen costing in order to improve cost management at the eThekweni Municipality?’. The following research questions were set to achieve the research aim: what are managers’ and non-managers’ perspectives of:

1. opportunities regarding the implementation of kaizen costing at the Water and Sanitation and Electricity Departments of the EThekweni Municipality?;
2. the structures and attitudes required to implement kaizen costing successfully?;
3. the advantages of implementing kaizen costing?;
4. the necessary attributes of management and employees to successfully implement kaizen costing?; and
5. any disadvantages resulting from the introduction of kaizen costing?

The research questions in conjunction with the research objectives intended to be addressed by this study favours a positivist epistemological position. The study’s research objectives inform the research methodology as well as the research paradigm. This is discussed in the following section.

### **3.3 Research paradigm**

A research paradigm can be described as a way, or a perspective, or a set of ideas of how people view knowledge (Neuman 2011: 65). It is further described as the way in which people see themselves in relation to knowledge and strategies on the employment of a body of methods, rules, and postulates used to discover knowledge (Neuman 2011: 65; Cresswell 2009: 5-6; Guba 1990: 17). The research paradigm consists of three main characteristics, namely: ontology which refers to the nature of reality (a belief about reality – there is a single reality or there is not a single reality); epistemology which

refers to the theory of getting knowledge (the theory of getting to the reality); and methodology which relates to how can we go about getting the data that explains the reality (Terre Blanche and Durrheim 2006: 6). Ontology, epistemology and methodology create a holistic view of how people view knowledge and how they see themselves in relation to such knowledge and the methodological strategies they use to discover it (Cresswell 2009: 5-6). The research paradigm is informed by the objectives of the research at hand (Mackenzie and Knipe 2006: 2). Mackenzie and Knipe (2006: 2) further state that research objectives are mainly twofold, namely, to fill the knowledge gap or to solve a problem. In this study, the research objectives are intended to fill a knowledge gap. Once the research paradigm has been chosen, the structure of the study as well the choice on methods for data collection will follow (Mackenzie and Knipe 2006: 2).

The research objectives can be further studied in terms of positivism or interpretivism (Henning 2004: 17). Interpretivism is concerned with interpretation and understanding the world in terms of its participants and hence is more suitable for research studies aimed at problem solving (Henning 2004: 17). Positivism on the other hand is more aligned to research studies that are aimed at filling a knowledge gap where the researcher's beliefs, personalities and values do not affect the findings of the study (Henning 2004: 17). Oliver (2010: 45) concurred with Henning (2004: 17) in that findings of a positivism study only depends on the nature of what is being studied. This is why positivism is further classified as objectivism, and interpretivism is classified as constructivism (Oliver 2010: 45). Since this study's objective is to fill a knowledge gap, it was more appropriate to adopt a positivism approach. However, a few aspects of the research instrument allows for interpretative approach. Hence, this study possesses a combination of both positivism and interpretivism approaches.

The ontological stance for the current study is objectivist in nature. The assumption for this stance lies in a belief that there is a single reality. An epistemological view for the current study is empiricist in nature. The structure, as explained in chapter one, follows the logic where a researcher identifies a knowledge gap from the literature review, then conducts research to fill the knowledge gap. The strategies for methodology adopted for this study are discussed in section 3.4 (research design).

The research paradigm categorises data interpretation into deductive for a quantitative study and inductive for a qualitative study (Gelo, Braakmann and Benetka 2008: 277). The terms, a quantitative study and a qualitative study, are explained in section 3.4.2 and 3.4.3 respectively. Deductive reasoning is applied where the researcher studies the topic from the broad perspective and then narrows it down to where hypotheses are developed and then confirmed if they are true or not (Sekaran and Bougie 2013: 26). Inductive reasoning is applied where the researcher develops some general conclusion or theories about a phenomenon being studied (Sekaran and Bougie 2013: 26). Here the researcher starts by formulating some tentative hypotheses that he/she can explore through specific observations and measures, and then begins to detect patterns and regularities (Sekaran and Bougie 2013: 26). The literature presented in chapter two showed that the application of kaizen costing has successfully curbed cost management deficiencies in manufacturing and a few selected service organisations. Since the research question for this study is about finding out whether kaizen costing can curb cost management deficiencies in the eThekweni Municipality, it is deductive in nature.

### **3.4 Research design**

In order to effectively address the research problem, it is necessary to devise a strategy which integrates the different components of the study in a coherent and logical way. This strategy is referred to as a research design (Kruger, Welman and Mitchell 2005: 52). The research design involves a plan which outlines, in detail, how a researcher undertakes to steer his or her research study (Saunders, Lewis and Thornhill 2011: 22). According to Mouton (2011: 55) and Sekaran and Bougie (2013: 95), the research design is informed by the research question at hand. Mouton (2011) further states that research design typically involves the describing and explaining data collection procedures, data measurement bases, data analysis, what instruments will be employed and how the instruments will be used. It also includes explaining whether the type of the study is descriptive, correlational, semi-experimental, experimental, review, or meta-analytic (Kruger, Welman and Mitchell 2005: 78). Research variables (dependent and independent), research questions, hypotheses, and plans of statistical analyses are also covered in the research design (Sekaran and Bougie 2013: 95). The data collection instrument, data collection procedures as well as the questionnaire administration are

explained in section 3.6 of this chapter. The following sections describe a descriptive study, quantitative and qualitative approaches and a case study.

### **3.4.1 Descriptive study**

The approach of this study was descriptive in nature. A descriptive study involves finding out what things are like by identifying and classifying main features and revealing their internal organisation (Kruger, Welman and Mitchell 2005: 23). This study is descriptive in nature because its main aim was to find out if kaizen costing would improve cost management in the eThekweni Municipality. A descriptive study may involve surveys or interviews which are intended to describe and demonstrate the relationships between variables (Kruger, Welman and Mitchell 2005: 23). According to Leedy and Ormrod (2012: 137) the time horizon of a descriptive study can either be longitudinal or cross-sectional. A longitudinal study involves collection of the data from the participants repeatedly over a period of time, whereas a cross-sectional study involves data collection from the participants at a specific point in time (Leedy and Ormrod 2012: 137). Since the data was collected from the subjects at a specific point in time and without manipulating or interfering with the study environment, this study is cross-sectional.

### **3.4.2 Quantitative and qualitative research approaches**

Kirton (2011: 137) and Kruger, Welman and Mitchell (2005: 78) state that the research design is categorised into two broad types, namely, quantitative and qualitative. The quantitative research design is further categorised further into three types: experimental research, quasi-experimental research and non-experimental research (Kruger, Welman and Mitchell 2005: 78). The current research study is quantitative and non-experimental in nature. A quantitative study is concerned with quantities and measurements which usually answer the “how many?” and “how often?” questions (Biggam 2008: 86). Clough and Nutbrown (2012: 21) state that a quantitative study deals with causal relationship measurement and analysis between variables. In contrast, a qualitative research approach examines the phenomenon in its entirety by allowing more flexibility between the research and participants in terms of acclimatisation for collaboration

(Clough and Nutbrown 2012: 21). A qualitative study is usually inductive in nature and analysed mainly in a more subjective perspective, and less useful in terms of generalisation of results because the sample size is typically small (Snape and Spencer 2003: 3). This is the reason why the quantitative approach was chosen over the qualitative approach for the current study. This study is quantitative in nature because it was based upon observable and measurable facts. A deductive process was used to assess if the application of kaizen costing will improve the cost management of the eThekweni Municipality. It went further in applying numerical data for the analysis of the results. Although the examined variables were not in-depth, they cut across large a number of cases. Several authors (Modarress, Ansari and Lockwood 2005; Monden and Hamada 1991; Mishra and Gupta 2010; Marin-Garcia, Del Val and Martín 2008; Rof 2011; Williamson 1997) assessing the application of kaizen costing towards continuous improvements used questionnaires and applied a fixed response options in their data collection. Hence this current study employs a quantitative research design.

### **3.4.3 Case study**

A case study is an in-depth study of a particular situation where a researcher investigates a contemporary phenomenon within its real-life context (Yin 2009: 18). It seeks to gain better insights into the detailed behaviours of the subjects of interest where evidence of the boundaries between phenomenon and context is not clear (Leedy and Ormrod 2012: 137). It is mainly characterised by its examination of data at the micro level or on a single individual or situation and its inability to generalise the findings. Yin (2009: 23) further asserted that the emphasis of a case study is on detailed contextual analysis of a limited number of events or conditions and their relationships. A case study approach was adopted for the purposes of this study. The reason why this approach was adopted is that a holistic, in-depth investigation within the context of the eThekweni Municipality cost management problem was required. Secondly, since the research paradigm for the current study is mainly positivist in nature, and the variables which were studied were established in advanced to assess if they fit in with the findings.

The following section covers the definition of the population used for the research and a description as well as a discussion of the sample and sampling method, including the size of the sample, and why it was appropriate.

### 3.5 Population and sample

Once the research design has been chosen for a study, it is important to explain who or what will be the population of the study. This section first covers a discussion on all aspects pertaining to the population of this study. Subsequently, the sample and sampling procedures employed is explained. Lastly, a section explaining what a census is, and why it was used in this study is presented.

#### 3.5.1 Population

The suitability of participants in a study is crucial component of the determined population (Graziano and Raulin 2013: 201). The target population is a set of all individuals, group of people, objects, events, or things of interest representing the whole or total of the cases involved that the researcher wishes to investigate (Fox 2010: 52). For the purposes of this study, the population from which the sample was drawn refers to all employees who were employed in the Water and Sanitation and Electricity Departments in eThekweni Municipality at the time the study was carried out. The total number of employees located in the headquarters of the Water and Sanitation Department was 510 on 18 January 2017. These 510 employees consisted of 16 employees who held managerial positions. The rest were at employee level. The total number of employees in the Electricity Department was 48 on 26 January 2017 consisting of 3 managers and the rest occupying employee level positions. Table 3.1 below shows the population per occupation for each department.

Occupation level	Population (number of employees)		Total
	Water and Sanitation Department	Electricity Department	
Managers	16	3	19
Non-managers	494	45	539
Total	510	48	558



### **3.5.2 Sample**

A sample is portion or subset of the target population selected to make inferences about the target population (Bryman and Bell 2011: 176). Bryman and Bell (2011: 176) further state that factors to consider when selecting the sample size include the time available, budget and the necessary degree of precision. Silverman (2008: 380) asserts that the crucial part of sampling is that it should be representative of the population and must enable the researcher to make broader inferences. The advantages of using a sample in a research study include that it is less time consuming in sampling, it has a low cost and that it is suitable when there are limited resources (Silverman 2008: 380). Although using a sample in an investigation possesses some advantages, it is important that the subsets of the population are well chosen so that accurate conclusions about the population can be produced (Bless, Higson-Smith and Kagee 2007: 97). While sampling was chosen for the participants in the Water and Sanitation Department, a census was used for the Electricity Department due to the smaller number of employees in that department. Further aspects on sampling are discussed below.

#### **3.5.2.1 Sampling techniques**

Sampling is a process or technique whereby a researcher obtains a representative sample from a population of interest for the purposes of estimating or determining parameters or characteristics of the entire population (Bless, Higson-Smith and Kagee 2007: 97). The sampling techniques that can be used in conducting a study can either be probability sampling or non-probability sampling (Sekaran and Bougie 2010: 267). Wegner (2012: 153) defines non-probability sampling as a sampling technique that is characterised by the researcher's subjective judgement rather than by random selection. Wegner (2012: 153) further elaborates on this by stating that the selection of elements of the population is done arbitrarily. Although non-probability sampling can be used in any type of research design, it is considered an inferior alternative to probability sampling if a researcher employs it in a quantitative research design (Bryman and Bell 2011: 179). In support of this, Wegner (2012: 154) highlighted the following disadvantages of using non-probability sampling:

- The sample is likely to be unrepresentative of the population, hence bias in the statistical findings is likely to occur.
- It may be invalid to draw statistical inferences because it is not possible to measure the sampling error when elements of the population are drawn using non-probability sampling.

Probability sampling is defined as a sampling technique that is characterised by the random selection of units from the population which enables a researcher to determine each unit's probability of being included in the sample (Silverman 2008: 380). Silverman (2008: 380) further states that probability sampling also enables the researcher to make generalisations about the population from results obtained in a sample whereas generalisation about the population when using a non-probability sampling is not possible. The sampling technique chosen for this study to select the sample from the Water and Sanitation Department is probability sampling. The rationale for choosing this sampling technique lies in the fact that the results obtained from the sample can be easily extrapolated to the entire population.

According to LoBiondo-Wood and Haber (2010: 230), there are three main types of probability sampling, namely, simple random probability; stratified random sampling; and cluster sampling probability. LoBiondo-Wood and Haber (2010: 230) further explained each of probability sampling types as follows:

- Simple random probability refers to a sampling technique that distributes equally the chance of each units of the population to be selected for inclusion in the sample. This sampling technique is mainly used where the population of interest is relatively small and homogenous.
- Stratified random sampling is a sampling technique that a researcher uses to subdivide, into subgroups, a population that normally consist of heterogeneous elements (called strata) to make each subgroup elements homogeneous. The process of subdividing the elements of the population is done before the sample can be drawn. The reason for stratifying elements of the population is done to ensure that a sample drawn from each subgroup produces more precise estimates of the population.
- Cluster sampling probability is a sampling technique that involves successive random sampling of units.

To select the sample for the Water and Sanitation Department, stratified random probability sampling was chosen. Since the main features of kaizen costing involve interaction between managers and employees (i.e. non-managers), it was deemed appropriate to stratify participants of this study according managerial and non-managerial positions. Since the number of managers compared to number of non-managers in both departments was small, disproportionate stratified random sampling was chosen. This was done to ensure that the responses obtained from managers are meaningful and representative of the manager's stratum. Once the strata were identified, a simple random probability technique was applied. All names of the participants in each stratum were put into separate hats to be randomly selected. From the total of 16 managers' names put in a hat, 14 names were drawn. From the non-managers' names in another hat, 258 names were drawn. While drawing names out of a hat may be considered simplistic, this method is supported by Silverman (2008: 383).

### **3.5.2.2 Census study**

Siniscalco and Auriat (2011: 7) argue that findings collected through a census are more accurate than findings collected through a sample. The reason for this is that information in a census study is collected from the entire population whereas in sampling the scope for error is more apparent since not every member of the population participates in the study (Siniscalco and Auriat 2011: 7). Using a census approach in the Electricity Department was appropriate because the population was small enough to be managed.

### **3.5.2.3 Size of the sample**

The size of the intended participants in this study is 320 in total. This sample size was chosen using the guidelines in Sekaran and Bougie (2013: 250). The number of participants in the Electricity Department is 48 since a census was chosen for this department. Therefore, the size of the sample for the Water and Sanitation Department is 272 (i.e. 320 – 48). Table 3.2 shows the breakdown of participants in each department.

<b>Table 3.2: Sample size breakdown</b>								
Occupation level	Water and Sanitation Department				Electricity Department			
	Population	%	Sample	%	Population	%	Census	%
Managers	16	3.14	14	5.15	3	6.25	3	6.25
Non-managers	494	96.86	258	94.85	45	93.75	45	93.75
Total	510	100	272	100	48	100	48	100

Having discussed the population and sample pertaining to this study, the next section discusses the instrument used for data collection, indicating how each part addresses objectives of this research.

### **3.6 The research instrument**

A research instrument is a tool or strategy that a researcher uses to measure or collect data (Sekaran and Bougie 2013: 24). Depending on the nature of the research that is being carried out, a research instrument may include instruments such as questionnaires, interviews, observations, reading and experiment (Sekaran and Bougie 2013: 24). Previous studies (Sani and Allahverdizadeh 2012; Savolainen 1999; Mishra and Gupta 2010; Manos 2007; Modarress, Ansari and Lockwood 2005; Singh and Singh 2009; Monden and Hamada 1991) that examined the implementation of kaizen costing with an aim to improve cost management, used questionnaires. These studies found a questionnaire to be a useful data collection instrument because the responses are gathered in a standardised way and are relatively quick to collect information. For these reasons a questionnaire was chosen as the research instrument for this study. A self-administered questionnaire approach for both Electricity and Water and Sanitation Departments was adopted for this study. A self-administered questionnaire is a type of questionnaire that is beneficial for both the researcher and the respondents because the respondents complete it on their own at the time, place and place they prefer (Vehovar and Manfreda 2008: 178-179). This type of questionnaire has an increased sense of privacy which results in data quality (Neuman 2011: 339). According to Leedy and Ormrod (2012: 189), with a self-administered questionnaire, the quality of responses is likely to be better than that where personal interaction between the respondent and researcher occurs in the form of an interview. Neuman (2011: 339) also states that using a self-administered questionnaire comes with advantages such as: lower costs than that

of interviewing; reduced interviewer bias; and a large number of participants may be reached in a short space of time. Although a self-administered questionnaire may seem to be the best method compared to the interview method, control of the responses is very limited. The interview method is another type of questionnaire administration method. It involves an interaction between the respondents and the researcher where the researcher asks questions and records responses instantly (Neuman 2011: 339). Although the control on responses is highly controllable with the interview method, interviewer-related biases are inherent (Leedy and Ormrod 2012: 189).

The content and layout, reasons for choice of questions, covering letter and pre-testing of the questions are explained in the following sections.

### **3.6.1 Content and layout**

In order address the objectives of this study, the questions in the questionnaire should be easily understandable (Dawson 2009: 80). The population was relatively fluent in English, hence the research instrument was written in English. When developing the questionnaire, the researcher was mindful of the research objectives of the current study. The research objectives and questions were informed by the literature review as outlined in chapter two of this study. The questionnaire was designed in such a way that all questions were easily understood and could be answered easily to achieve a high response rate. In order to logically present the flow and order of questions in the questionnaire, the questionnaire was divided into three sections, namely, section A, section B and section C. Section A questions asked for demographic information. Only two questions in section A were dichotomous. The two dichotomous questions were based on gender and department to which the respondents belong. Respondents were required to tick only one block in each question. Section B's questions were based on the implementation of kaizen costing.

A definition of kaizen costing was provided at the beginning of section B in order to explain to respondents what kaizen costing is about. Section C gave respondents the opportunity to express their views on this research. Respondents were also asked to comment on any matters which they felt were not covered in the questionnaire.

There are two types of questions a researcher can use to design a questionnaire, namely, closed-ended questions and open-ended questions (Keele 2011: 48). Closed-ended questions are mainly characterised by a high response rate and by limited answers for the respondent to select from. Data obtained from closed-ended questions is easily quantifiable and often conclusive in nature, and can be statistically analysed. Although closed-ended questions may produce a high response rate (Siniscalco and Auriat 2011: 4), they also have some drawbacks. One drawback is that there might be insufficient options for the respondents to choose from if the researcher does not fully understand the topic under investigation (Siniscalco and Auriat 2011: 4). Furthermore, the purpose of the research might not be achieved and the information might be insufficient or contain errors (Keele 2011: 48).

Open-ended questions give the respondents an opportunity to explain their responses as it allows the respondent to freely form the answers and provide in-depth information about a question (Keele 2011: 48). Keele (2011: 48) further states that open-ended questions are qualitative in nature and do not require complex statistical analysis. Dawson (2009: 85) asserts that open-ended questions are also explanatory in nature and are more suitable and useful for small population studies. For fields that a researcher is less qualified in, this type of question allows the researcher to gain information from subject matter experts in the field through their responses to the survey (Sekaran and Bougie 2010: 203). Open-ended questions also contain some drawbacks. One drawback is that information gained from the respondents might be overwhelming, since all responses are seen as a unique opinion. Furthermore, it is not easy to make inferences about a population if a sample was used for the study and if all responses are considered unique opinions.

Since this study is descriptive and quantitative in nature, and hence requires a complex analysis of data, only two open-ended questions were used. The rest of the questions were closed-ended. The use of predominantly closed-ended questions stems from the fact that open-ended questions are found to have a very low response rate compared to closed-ended questions (Siniscalco and Auriat 2011: 4). The researcher chose to self-administer the questionnaire and was available to provide clarity to respondents if required. The section dealing with the questionnaire administration is covered in section 3.7.

Each type of question (whether closed-ended or open-ended) can be further classified into nominal scale, ordinal scale, interval and ratio (Keele 2011: 49). Nominal scale refers to placement of individuals in different, mutually exclusive and exhaustive categories in respect of such characteristic (Kruger, Welman and Mitchell 2005: 138). Ordinal scale is a rank order used to sort data in terms of magnitude since differences between the variable measured cannot be quantified (Keele 2011: 48). Examples of non-numeric concepts that are generally measured in ordinal scale include happiness and satisfaction. Ratio scale has an absolute zero that enables the researcher to make comparisons such as being twice as high, or one-half as much. Examples of ratio scales include: physical scales of time; length; and volume (Israel 2008: 274). The interval scale provides numeric information regarding the degree of difference between individual data items within a set (Israel 2008: 274).

The classes of measurement scales can be further categorised into a Likert scale. Likert scale type questions are widely used in survey research to measure or gauge values, attitudes or opinions of respondents about a particular topic (Babbie 2010: 256). Responses of the respondents to the questions from a research instrument are scaled to measure, e.g. the extent to which individuals agree or disagree with a statement or option about a particular topic (Babbie 2010: 256).

Section A of the questionnaire consisted of 6 questions which were nominal scale type questions. These are also quicker and easy to analyse (Babbie 2010: 254). All questions in section B, with the exception of the last question, were closed-ended. The last question in section B required the respondents to indicate if they foresee any disadvantages of implementing kaizen costing in the eThekweni Municipality.

Likert scale questions were used in Section B of the questionnaire. These questions required the respondents to indicate their level of agreement with the statements that were developed from the literature review to address the research objectives. Respondents were required to choose only one option in each statement by ticking in the appropriate column. The level of agreement with the statements was denoted numerical values which ranged from 1 to 5, where 1 = Strongly Disagree (SD); 2 = Disagree (D); 3 = Neither Agree nor Disagree (NA/ND); 4 = Agree (A); and 5 = Strongly Agree (SA). Likert scale questions, according to White and McBurney (2012: 439), makes it easy to code and analyse data. This is one of the reasons why the majority

of questions in the research instrument were Likert scale. All questions in section B, except question 43, were structured on an ordinal scale. Question 43 is the only open-ended question in section B. The last section of the research instrument had only one question and was open-ended. None of the questions in the questionnaire utilised the interval and ratio scale.

### **3.6.2 Reasons for question choice**

The first set of Likert scale type questions focused on research question 1, i.e. opportunities regarding the implementation of kaizen costing. These questions were as follows:

**Do you agree that implementing kaizen costing in eThekweni Municipality will result in the following opportunities?** The following opportunities were provided.

- Waste elimination will be improved through implementing kaizen costing
- Processes will be improved through implementing kaizen costing
- Systems will be improved through implementing kaizen costing
- Productivity will be improved through implementing kaizen costing
- Implementing kaizen costing will improve customer satisfaction
- Implementing kaizen costing will develop an organizational culture of collaborative learning at all levels of the company
- Competitiveness of this department will improve through implementing kaizen costing
- My creativity will be encouraged in this department through kaizen costing

The next set of Likert scale type questions focused on research question 2, i.e. structures and attitudes to implement kaizen costing successfully. Respondents were required to indicate their level of agreement with a number of statements.

**To implement kaizen costing successfully in eThekweni Municipality, the following structures and attitudes are required. Please indicate your level of agreement with the following statements:**

- Employees are placed in the right positions in terms of their skills



- The role I play in my position aligns with what I like
- My co-workers have attitudes of positivity
- I take responsibility for creating an environment in which I can learn
- My ideas are valued in this department
- Employees relate to other employees positively
- Teamwork is helpful in achieving my organisational goals
- The code of ethics is followed properly in this department
- Management is prepared to empower employees
- Employees are prepared to be empowered by management
- The organisational culture in this department allows kaizen costing to be implemented

The third research question focused on the advantages of kaizen costing and whether implementing kaizen costing will curb poor cost management. This question, and the suggested advantages, were as follows:

**Do you believe that implementing kaizen costing in eThekweni Municipality will result in the following advantages?**

- Kaizen costing will encourage positive attitudes towards working as a team in this department
- Kaizen costing will enhance the value of the services provided by this department
- Kaizen costing will help this department achieve its goals
- Kaizen costing can help the organisation to solve the problems that is currently facing
- Kaizen costing will improve the efficiency in which activities are performed in this department
- Kaizen costing will improve the quality of the services provided by this department
- Kaizen costing will provide continuous improvements in process in this department

- Kaizen costing will encourage employees to initiate changes for continuous improvements in this department

The fourth research question examined the respondents' perspectives of the necessary attributes of management and employees to successfully implement kaizen costing. This question, and the suggested attributes, were posed as follows:

**For the successful implementation of kaizen costing, employees and management need certain attributes.**

- Management welcomes new systems that are intended at improving organisational performance
- Management encourages employees to come up with new ideas
- Management is committed to supporting employee initiatives in all respects of continuous improvement
- Management delegates authority to employees when necessary
- Management involves employees in decision making in this department
- There are initiatives undertaken by management in this department to encourage teamwork
- Employees have the potential to engage in activities that relate to continuous improvements in this organisation
- Employees are used to the current systems of this department, however they will be able to adjust to the change to kaizen costing
- Employees are committed to learning in an attempt to get more knowledge in their field of work within this department

The final research question focused on whether the respondents perceived any disadvantages that may result should kaizen costing be introduced in eThekweni Municipality. This question required a yes/no answer. Respondents were asked to explain what they thought these disadvantages would be.

### **3.6.3 Covering letter**

A covering letter was issued to all participants. It was attached to each questionnaire for the participants to sign it as acknowledgement that participation in this study was voluntary. All ethical considerations and procedures from the ethics committee at Durban University of Technology were adhered to, and, hence approval to go ahead with the study was granted to the researcher. To maintain the confidentiality of the participants, no direct reference to participants' personal particulars was made. The main reason why a covering letter is important, according to Cohen, Manion and Morrison (2007: 51-53), Durrheim and Wassenaar (1999), Mertens (1998: 24) and Sekaran and Bougie (2010: 220), is that the participant is obliged to provide truthful and honest responses, and hence the respondents should not be subject physical or mental harm as a result of participating in the study. Furseth and Everett (2013: 10) further add that since the consent from the participants is essential to obtain before data is collected, a covering letter has to be issued to participants. Hence, the main purpose for this covering letter was:

- to assure participants that confidentiality will be maintained;
- to assure the participants that the information from their responses will be used for the purposes of this study only;
- to inform participants that there will be no financial benefits for participating in this study;
- to inform participants that they will not be subject to any harm as a result of participating in this study; and
- to seek consent from the participants to participate in this study.

Other aspects covered in the covering letter included:

- title of the research study;
- principal researcher;
- supervisor;
- brief introduction and purpose of the study;
- outline of the procedures; and
- persons to contact in the event of any problems or queries.

### 3.6.4 Pre-testing

Pre-testing is used before conducting a study in order to determine any flaws or fundamental research problems that may exist in the research instrument (Zinkmud, Babin, Carr and Griffin 2010: 231). The purpose of pre-testing of the questionnaire was to evaluate the selected research design, methodology and the measuring instruments, based on the study in an attempt to predict the appropriateness of the sample size, relativity and effectiveness of the study and improve upon the study design prior to administering the questionnaire to the entire sample.

Ten questionnaires were administered to the chosen participants for pre-testing. The following persons pre-tested the questionnaire:

- Three accountants in the Finance Department of eThekweni Municipality which is situated in the Florence Mkhize building; and
- From Richfield Graduate Institute of Technology:
  - Two professors from the academic department in the head office situated in 292 Anton Lembede Street; and
  - Five lecturers at the campus located in 44 Joe Slovo Street.

Although the participants were randomly chosen, they had the necessary expertise to provide feedback on the questionnaire. They were also not part of the staff in either the Water and Sanitation Department or Electricity Department. Participants were asked to make comments on the wording as well as the format of the questionnaire and were all contacted in person for the feedback. The feedback indicated that there were no vague, unclear or not easy to understand questions or statements. However, based on comments made by the participants, a few changes were made. Firstly, questions covering more than one aspect were broken into their component parts and other questions were edited where necessary. Secondly, the number of questions was reduced (section B questions were reduced from 50 to 43). Lastly, one question in section A about the respondents' highest level of qualification was added.

The description on how data was gathered using the questionnaire is covered in the following section.

### **3.7 Procedure for data collection**

According to Brink, Van Der Walt and Van Rensburg (2005: 145), the procedures involved in collecting data using a questionnaire include:

- (1) informing the respondents about the study;
- (2) delivering the questionnaires to the respondents; and
- (3) administration of the questionnaires.

Permissions from the Deputy Head at the Electricity Department and from the Head of Water and Sanitation Department were obtained. The intended participants in the Water and Sanitation Department were notified of the study using e-mail by the assistant of the Head of Water and Sanitation Department, prior to the distribution and collection of questionnaires. The email notifying the intended participants at the Water and Sanitation Department attached the letter of permission to conduct the study. For the Electricity Department, participants were notified of the study by a finance official through face to face interaction prior to the distribution and collection of questionnaires.

Subsequent to the notification, the questionnaires were delivered to the work locations of the participants. Each questionnaire was accompanied by a letter of consent and information. Participants were given a maximum of two weeks to complete the questionnaires. While the researcher was still distributing the questionnaires, other participants who had already received the questionnaires completed them immediately. The collection of completed questionnaires started the same day the questionnaires were distributed. The distribution of questionnaires in the Water and Sanitation Department started on the 17<sup>th</sup> of January 2017 and finished on the 19<sup>th</sup> of January 2017. It took only one day (19 January 2017) to distribute the questionnaires in the Electricity Department. The collection of the completed questionnaires from both Water and Sanitation and Electricity Departments stopped on 1<sup>st</sup> of February 2017.

Having gathered the data through the research instrument, following above data collection procedures, the next step is to discuss the response rate. The following section covers the discussion on the response rate.

### 3.8 The response rate

Table 3.3 shows the response rate for the both Electricity and Water and Sanitation Departments. In total, 320 questionnaires were distributed and 250 questionnaires (78.13%) were returned. Of the 250 questionnaires, six (6) could not be used because they were partially completed. Therefore only 244 questionnaires (76.25%) were considered usable. Collecting completed questionnaires on a daily basis resulted in a good response rate.

Department	Planned sample	Achieved sample	Response rate (%)
Water and Sanitation	272	199	73.16
Electricity	48	45	93.75
Overall total	320	244	76.25

Tables 3.4 and 3.5 below further show the response rate split according to employee occupation and the departments to which the employees belong. These tables show that in both departments a 100% response rate was achieved from the managers. Non-managers' response rates in the Water and Sanitation Department were lower (71.48%) when compared to that of the Electricity Department (93.33%).

Stratum	Planned sample	Achieved sample	Achieved response rate (%)
Non-Managers	256	183	71.48
Managers	16	16	100
Overall total	272	199	73.16

Stratum	Planned sample	Achieved sample	Achieved response rate (%)
Non-Managers	45	42	93.33
Managers	3	3	100
Overall total	48	45	93.75

The following section describes how the data was prepared and analysed.

### **3.9 Data analysis and interpretation**

Data analysis is a method or process of examining or evaluating the data collected from various sources to address the objective of the study (Babbie 2008: 122). It includes statistical and/or logical techniques that are instrumental in identifying patterns and themes in the data (Babbie 2008: 122). This section first covers data preparation and processing and then discusses the statistical presentation and analysis of the data.

#### **3.9.1 Data preparation**

All completed questionnaires were collected from the participants to prepare for data analysis. The statistical analysis program, Statistical Package for Social Sciences (SPSS) version 22.0, was used. Each question in the questionnaire was labelled with a unique number starting from 1 to 43. The data was entered in SPSS using the same numbering in order to avoid any confusion or difficulties in data analysis at a later stage. To ensure that responses captured in SPSS are accurate, the responses from the questionnaire were double checked against the responses captured in SPSS each time the capturing process was finished per questionnaire.

#### **3.9.2 Data processing**

The following steps were taken to ensure that data was processed efficiently and effectively.

- step 1: editing of data;
- step 2: coding of data;
- step 3: classification of data;
- step 4: tabulation of data; and
- step 5: data diagrams.

Step 1 involved a final and a thorough scrutiny of data collected from questionnaires to ensure that there were no omissions or errors in it. Step 2 involved organising the choices and responses to questions and statements, used in the questionnaire, into categories and numerals. This process was done at a design stage of the questionnaire. Step 3 involved categorising or grouping the data according to similar or same characteristics. Since there was diversity in the data collected, this step was necessary. Data was classified

into two categories, namely, quantitative data and qualitative data. It was further grouped according to employee occupations. This involved a dichotomous classification, which were: managers and non-managers. Dichotomous classification is characterised by data that can only be divided into two especially mutually exclusive or contradictory groups (Bryman and Bell 2011: 341). Since two Departments were involved in this investigation, data was also grouped according to Department (Water and Sanitation and Electricity Departments). Step 4 involved tabulation of raw information into summarised compact form for ease of further analysis. The types of tables used are explained in section 3.9.3 below. Step 5 involves a careful selection of graph and charts used to present data. However, for the purposes of this study, only tables were deemed necessary for presentation purposes.

### **3.9.3 Statistical presentation and analysis of the data**

According to LoBiondo-Wood and Haber (2010: 78) data may be analyzed using descriptive statistics or inferential statistics. Descriptive statistics are used to describe, present or summarise a set of quantitative data into manageable or simplified form (LoBiondo-Wood and Haber 2010: 78). Descriptive statistics are mainly concerned with explaining what is going on from the observed data. Kinnear and Taylor (2010: 671-676) state that descriptive statistics are used to organise data involves tables and graphs whereas summarising data involves central tendency and variation. Tables are further categorised into frequency distributions and relative frequency distributions whereas graphs include bar charts or histograms; stem and leaf plots; and frequency polygons (Struwig and Stead 2009: 271). Central tendency includes analysis such as mean, median and mode whereas variation analysis include analysis such as range, interquartile range, variance and standard deviation (Kinnear and Taylor 2010: 671-676). This study used descriptive analysis because the overall research question was to find out managers' and non-managers' perspectives on whether or not kaizen costing can improve cost management at the eThekweni Municipality. Using SPSS enabled the data to be analysed descriptively and inferentially. Since this study is descriptive in nature and only two questions from the instrument were open-ended, and themes that were suitable for the analysis of such questions were identified to be included in statistical approaches used for this study.



Inferential statistics looks at making inferences about the population, not only using the immediate results obtained through research instrument but by also trying to reach conclusion or making judgement beyond the observed data (Maree 2010: 217). It is mainly concerned with establishing the cause and effect. The inferential statistics used in this study included the Mann Whitney U test (to test for differences between samples) and Cronbach's Alpha.

The following section covers the limitations that were identified and the potential weaknesses that were anticipated in this study relating to the methodology, sampling, data analysis, and methods.

### **3.10 Limitations of the study**

eThekwini Municipality is one of 226 municipalities in South Africa and it operates in the same manner as the other South African municipalities. Due to limited time of the study, only two departments (Water and Sanitation and Electricity Departments) were selected for studying kaizen costing in the eThekwini Municipality. Therefore, the findings of this study cannot be generalised to all Water and Sanitation and Electricity Departments in all South African municipalities. Although this study is a case study of the eThekwini Municipality, results can, however, be generalised to other Water and Sanitation and Electricity Departments in other municipalities of South Africa that operate the same way as eThekwini Municipality.

The section that follows covers the description of what validity and reliability in the context of this research is. It further discusses how validity and reliability were ensured.

### **3.11 Validity and reliability**

A researcher needs to control all possible factors that threatens the researcher's finding in order for the study to be valid. The main aim of the research study is for the research questions to be answered by the findings. If the results are not valid, the research objectives are not answered. The development of questionnaire was informed by the research objectives.

Reliability refers to a measure that provides the stable and consistent results each time it is tested (Fink 2008: 188). This means that if a study was conducted for the second time, it is reliable if it produces the same results. Fink (2008: 188) further states that reliability alone is not sufficient, for a study to be reliable, it needs to be tested for validity as well. This means measuring how credible or believable the results are. Validity refers to the degree to which a measure assesses what it is purported to measure (Silverman 2006: 210-212). According to Bruce, Pope and Stanistreet (2008: 173-174), there are four types of validity, namely, face validity, content validity, construct validity and criterion validity.

❖ Face validity

Face validity is regarded as a superficial measure of validity because it examines whether the items in the instrument read as if they measure what it intends to measure, i.e. in this study it would be managers' and non-managers' perspectives on the impact of implementing of kaizen costing on cost management (Sekaran and Bougie 2013: 394). It relies mainly on the subjective judgement of the researcher. Face validity was ensured by pre-testing the questionnaire in order to assess if the participants understood what was required of them and whether the questionnaire measured the impact of implementing kaizen costing on cost management at the eThekweni Municipality.

❖ Content validity

The content validity of this study is the extent to which the elements in the measurement instrument describe or portray precisely the impact of implementing kaizen costing towards improving cost management in the eThekweni Municipality. The concepts, constructs and variables used in construction of the measurement instrument for this study were extracted from relevant and representative studies of implementation of kaizen costing. An assessment of content validity was made during the initial development of the questionnaire and during the pre-testing stage.

❖ **Construct validity**

Sekaran and Bougie (2013: 392) defines construct validity as the degree to which a test confirms the theories around which the test was designed. All elements/questions in the questionnaire measure the domain of implementation of kaizen costing. Furthermore, the components of the questionnaire have a high level of correlation with the components studied in the literature review.

❖ **Criterion validity**

According to Sekaran and Bougie (2013: 392), criterion validity is the extent to which a measure predicts an outcome for another measure. The questionnaire used in this study reflects constructs relating to the implementation of kaizen costing used in the previous studies.

Validity is further categorised into two types, namely, external validity and internal validity. These are explained below.

### **3.11.1 External validity**

Findings are externally invalid if they cannot be applied elsewhere other than where the study was conducted (Gelo, Braakmann and Benetka 2008: 274). External validity is concerned with generalisability of the results. This can either be by generalizing the results to the population from which the sample was drawn or to the populations/contexts of other settings or time. In an attempt to maximise external validity for generalisability on population of the Water and Sanitation and Electricity Department, Sekaran and Bougie's (2013: 250) table for determining the sample size was instrumental in this study. As this was a case study of the eThekweni Municipality, generalising to other populations cannot be guaranteed. However, since municipalities in South Africa are governed and operated under the same systems and legislations, the results may be generalised to other South African municipalities.

### **3.11.2 Internal validity**

Within the study itself, there may be factors that may invalidate the study's findings. Such factors may include flaws in interpretations to support the design chosen for the

study or, using the wrong instrument for data collection. Internal validity is concerned with causal relationships. Internal validity was ensured by pre-testing. As explained in section 3.6.4, the questions were written in a language that is understood by all participants and all questions were easily understandable. Furthermore, the instructions in the questionnaire were simple and straightforward.

### **3.11.3 Reliability**

The reliability of the results of this study was ensured at the time the questionnaire was developed. It was also ensured by pre-testing, as the participants clearly understood the questions and instructions in the instrument. To ensure that the participants answered the questions truthfully and honestly, anonymity for the participants was assured. The measurement instrument was designed in such a way the all items described in it were not ambiguous. Hence no misinterpretation of such items was expected. The abstract concepts were measured with enough indicators of equal kind and consistent administration of data collection conditions was maintain. The researcher ensured that all possible alternatives are provided in the instrument and that the questions were presented in a proper order. The questionnaire was not too long or too difficult to read.

The study also used Cronbach's Alpha to test for reliability in this study. Cronbach's Alpha is used to assess how well variables are correlated (Wilson and Sapford 2006: 121). Wilson and Sapford (2006: 121) further states that there should be a high correlation between variables to show that they actually measure the same thing. Bland and Altman (1997: 572) and Gupta and Gupta (2011: 66) consider a reliability coefficient of 0.7 to 0.8 or higher as satisfactory. The overall reliability score for the closed-ended questions in section B of the questionnaire is 0.961. The results of the Cronbach's Alpha test are discussed in chapter four.

The section below provides a brief summary of the main aspects covered in this chapter.

### **3.12 Summary**

This chapter discussed the research design and methodology employed in this study. The discussion provided the logic behind the chosen research methods that the researcher applied in order assess whether implementing kaizen costing can improve

cost management problem faced by the Water and Sanitation and Electricity Departments in the eThekweni Municipality.

The research paradigm was a positivist approach because the main aim of this research is intended to fill the knowledge gap identified on kaizen costing in eThekweni Municipality. The discussion on the research paradigm further focused on a description of the interpretivism approach as this research also adopted this approach. This was mainly because the research instrument allowed for some interpretation in terms of the responses obtained from the participants. This study was a quantitative descriptive survey which was further classified as a case study because the problem identified was based in eThekweni Municipality. The research instrument used in this study was a questionnaire which comprised predominantly closed-ended questions. It was self-administered by a sample of 320 participants who were stratified as managers and non-managers. The sample was drawn from a population of 558 members from both Departments of Water and Sanitation and Electricity. The overall response rate obtained was 81.25%. Data analysis and interpretation used descriptive statistics and inferential statistics. Descriptive statistics included the use of tables and measures of central tendency whereas inferential statistics utilised Cronbach's Alpha. The main limitation is that this research is a case study of the eThekweni Municipality which decreases the generalisability of the results. The deliberations on how pre-testing of the questionnaire increased the reliability and validity were also covered.

The next chapter focuses on the presentation, interpretation and discussion of the research findings.

## CHAPTER FOUR

### PRESENTATION AND DISCUSSION OF THE RESULTS

#### 4.1 Introduction

Chapter 3 focused on the design and methodology used for the current research study. The main aspects of the research design and methodology that were explored covered: research paradigm and methods; methodological approach; the population; the sample; sampling method; research instrument; data collection procedures; the response rate; limitations of this study; and reliability and validity.

This chapter presents, interprets and discusses the empirical findings relating to the implementation of kaizen costing with the intention to improve cost management at the Water and Sanitation and Electricity Departments in the eThekweni Municipality. Data was collected through use of questionnaires. The target respondents selected for this study were managers and non-managers in both the Water and Sanitation and Electricity Departments in the eThekweni Municipality. These results are presented using descriptive statistics in the form of frequency tables for the quantitative and qualitative data collected.

The focus of this study is to assess managers' and non-managers' perspectives on the implementation of kaizen costing towards improving cost management at the Electricity and Water and Sanitation Departments in the eThekweni Municipality. Numerous empirical studies (Modarress, Ansari and Lockwood 2005; Okoye, Egbunike and Meduoye 2013; Al Smadi 2009; Henri, Boiral and Roy 2015) have been conducted to assess the adoption of kaizen costing with an intention to improve processes and functions in organisations. For comparative purposes, the findings of the current study are compared to selected studies which were discussed in chapter 2. In this chapter, the objectives of this study are addressed through the analyses of the respondents' responses obtained from the eThekweni Municipality. Chapter 1 outlined the objectives of this study as follows:

To examine respondents' perspectives of:

1. opportunities regarding the implementation of kaizen costing at the water and electricity departments of the EThekweni municipality;

2. the structures and attitudes required to implement kaizen costing successfully;
3. the advantages of implementing kaizen costing;
4. the necessary attributes of management and employees to successfully implement kaizen costing; and
5. any disadvantages resulting from the introduction of kaizen costing.

As the rationale for kaizen costing is continuous improvements in cost management, there were no specific questions on cost management *per se*.

The following section presents the biographic and background data of the respondents.

#### **4.2 Biographical data and background information**

The biographical data and background information was obtained from the participants through answering questions in Section A of the questionnaire. Section A questions covered the gender profiles and the age (in years) of the participants, the number of years the participant has been working in the organisation, the participant's occupation (either manager or non-managers), and the respective department in which the participants belongs (either Electricity Department or Water and Sanitation Department). The respondents were also asked to indicate their highest level of qualification and the length of time they have been working in the organisation. The biographic and background information is necessary for this study as each category plays a unique role in achieving the objectives of this study. The information pertaining to the respondents' biographical information and background is presented in Tables 4.1 to 4.3.

The following section presents and analyses the age groups of the respondents.

##### **4.2.1 Age (in years) of the respondents**

The biographical data and background information in terms of age, in years, of the respondents (managers and non-managers) in each department are presented in Table 4.1. The total count as well as percentage thereof for each age group in each employee

occupation are also presented. The age groups are divided into four categories, i.e. 18-30, 31-40, 41-50 and >50.

		Water and Sanitation			Electricity			Total			
		Manager	Non-manager	Total	Manager	Non-manager	Total	Manager	Non-manager	Total	
Age (years)	18 - 30	Count	4	69	73	0	10	10	4	79	83
		% within occupation	25.0%	37.7%	36.7%	0.0%	23.8%	22.2%	21.1%	35.1%	34.0%
		% of Total	2.0%	34.7%	36.7%	0.0%	22.2%	22.2%	1.6%	32.4%	34.0%
	31 - 40	Count	3	79	82	1	23	24	4	102	106
		% within occupation	18.8%	43.2%	41.2%	33.3%	54.8%	53.3%	21.1%	45.3%	43.4%
		% of Total	1.5%	39.7%	41.2%	2.2%	51.1%	53.3%	1.6%	41.8%	43.4%
	41 - 50	Count	3	25	28	1	6	7	4	31	35
		% within occupation	18.8%	13.7%	14.1%	33.3%	14.3%	15.6%	21.1%	13.8%	14.3%
		% of Total	1.5%	12.6%	14.1%	2.2%	13.3%	15.6%	1.6%	12.7%	14.3%
	> 50	Count	6	10	16	1	3	4	7	13	20
		% within occupation	37.5%	5.5%	8.0%	33.3%	7.1%	8.9%	36.8%	5.8%	8.2%
		% of Total	3.0%	5.0%	8.0%	2.2%	6.7%	8.9%	2.9%	5.3%	8.2%
	Total	Count	16	183	199	3	42	45	19	225	244
		% within occupation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	8.0%	92.0%	100.0%	6.7%	93.3%	100.0%	7.8%	92.2%	100.0%

The largest number of the respondents (106 or 43.4% of the total sample) are between the age of 31 and 40. The second largest number of the respondents (83 or 34%) are between the age of 18 and 30. The third largest number of respondents (35 or 14,3%) are between the 41-50 age group. The least number of the respondents (20 or 8,2%) are in the age group that is greater 50. The manner in which the total number of participants are distributed in each age category is similar in both departments. The number of non-managers also follows the same pattern to the total sample in term of age group. The only exception is with managers where the largest number is in the category of >50. This is to be expected as managers would need more experience and therefore are more likely to be older. It is evident that the participants are non-management dominated, i.e. 92.2% and 7.8% for non-managers and managers, respectively. It is also evident that all age groups for both managers and non-managers in both departments are represented, except for managers in the electricity department where participants from the management are all older than 30 years. As it is critical for successful implementation of kaizen costing that collaboration between managers and non-managers is effectively



maintained and that management involve all employees of the organisation at all levels, both managers and non-managers are represented in the total sample. This indicates that they represent the correct target group for answering the questionnaire.

The biographical and background information are further presented and analysed in terms of the gender profiles of the respondents in each department in the following section.

#### 4.2.2 Gender profile of the respondents

Issues of gender in terms of all categories of employee occupations are critical in ensuring that managers and non-managers are represented in the study. The gender data is required for the study and also for the purposes of gender equity. This section presents the analysis of the gender profiles of the respondents. The gender profile's total count and the percentage thereof are presented for each department as per employee occupation in Table 4.2 below.

		Water and Sanitation			Electricity			Total			
		Manager	Non-manager	Total	Manager	Non-manager	Total	Manager	Non-manager	Total	
Gender	Male	Count	11	97	108	2	18	20	13	115	128
		% within occupation	68.8%	53.0%	54.3%	66.7%	42.9%	44.4%	68.4%	51.1%	52.5%
		% of Total	5.5%	48.7%	54.3%	4.4%	40.0%	44.4%	5.3%	47.1%	52.5%
	Female	Count	5	86	91	1	24	25	6	110	116
		% within occupation	31.3%	47.0%	45.7%	33.3%	57.1%	55.6%	31.6%	48.9%	47.5%
		% of Total	2.5%	43.2%	45.7%	2.2%	53.3%	55.6%	2.5%	45.1%	47.5%
	Total	Count	16	183	199	3	42	45	19	225	244
		% within occupation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	8.0%	92.0%	100.0%	6.7%	93.3%	100.0%	7.8%	92.2%	100.0%

In the Water and Sanitation Department the gender analysis indicates that the management is dominated by males (11 out of 16 or 68.8%). Only 31.3% (or 5 of the 16 managers) of the total sample in the Water and Sanitation Department are females. Even for non-managers in the Water and Sanitation Department the largest number of respondents are males (97 out of 183 or 53%). The overall sample in this department is mainly dominated by males (108 out of 199 or 54,3%). The pattern for managers in the Electricity Department is similar to that of Water and Sanitation Department (2 out of 3

managers are males or 66,7%). However, the pattern for non-managers for the Electricity Department is opposite to that of the Water and Sanitation Department (24 females vs 18 males). The total sample for both departments reveals that management is dominated by male employees (68.4% for males and 31.6% for females). This is also the case for non-managers, although in this case the difference between female non-managers and male non-managers is only 2.2% (51.1% - 48.9%). This means that the overall number of respondents representing female and male non-managers is fairly equal.

The biographical and background information is further presented and analysed in terms of the qualifications of the respondents in the section that follows.

#### **4.2.3 Qualifications of the respondents**

In the questionnaire, the respondents were required to provide their highest qualification obtained in an attempt to ascertain their academic qualifications and thus their skill base. The staff academic qualifications are presented per department in Table 4.3. The academic qualifications, as outlined in Table 4.3 below, include Grade 12 (Matric), Certificate after Matric, Diploma, Degree, Honours and Other.

<b>Table 4.3: Biographical data and background information: Qualification</b>											
			Water and Sanitation			Electricity			Total		
			Manager	Non-manager	Total	Manager	Non-manager	Total	Manager	Non-manager	Total
<b>Highest level of qualification</b>	Grade 12 (Matric)	Count	1	14	15	0	3	3	1	17	18
		% within occupation	6.3%	7.7%	7.5%	0.0%	7.1%	6.7%	5.3%	7.6%	7.4%
		% of Total	0.5%	7.0%	7.5%	0.0%	6.7%	6.7%	0.4%	7.0%	7.4%
	Certificate after Matric	Count	0	15	15	0	2	2	0	17	17
		% within occupation	0.0%	8.2%	7.5%	0.0%	4.8%	4.4%	0.0%	7.6%	7.0%
		% of Total	0.0%	7.5%	7.5%	0.0%	4.4%	4.4%	0.0%	7.0%	7.0%
	Diploma	Count	8	85	93	1	16	17	9	101	110
		% within occupation	50.0%	46.4%	46.7%	33.3%	38.1%	37.8%	47.4%	44.9%	45.1%
		% of Total	4.0%	42.7%	46.7%	2.2%	35.6%	37.8%	3.7%	41.4%	45.1%
	Degree	Count	2	54	56	1	17	18	3	71	74
		% within occupation	12.5%	29.5%	28.1%	33.3%	40.5%	40.0%	15.8%	31.6%	30.3%
		% of Total	1.0%	27.1%	28.1%	2.2%	37.8%	40.0%	1.2%	29.1%	30.3%
	Honours	Count	5	13	18	1	4	5	6	17	23
		% within occupation	31.3%	7.1%	9.0%	33.3%	9.5%	11.1%	31.6%	7.6%	9.4%
		% of Total	2.5%	6.5%	9.0%	2.2%	8.9%	11.1%	2.5%	7.0%	9.4%
	Other	Count	0	2	2	-	-	-	0	2	2
		% within occupation	0.0%	1.1%	1.0%	-	-	-	0.0%	0.9%	0.8%
		% of Total	0.0%	1.0%	1.0%	-	-	-	0.0%	0.8%	0.8%
	Total	Count	16	183	199	3	42	45	19	225	244
		% within occupation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	8.0%	92.0%	100.0%	6.7%	93.3%	100.0%	7.8%	92.2%	100.0%

A large majority of the respondents (91.8% or 224 (17 (Certificate after Matric) + 110 (Diploma) + 74 (Degree) + 23 (Honours)) out of 244) have a post-matric education, while the remainder (8,2% (0,8% (other) + 7,4% (Matric)) has either Matric or Other. The majority of all the non-managers (67,5% or 172 out of 255 non-managers (71 (degree) + 101 (Diploma))) have either a diploma or degree. In each department, the largest number of the respondents lie within the diploma and degree category. The majority of all the managers have either a Diploma or Honours (78,9% or 15 managers (9 (Diploma) + 6 (Honours)) out of 19). The findings indicate that the current workforce is literate because the entire workforce had received at least some kind of basic education. This finding may facilitate communication.

The section that follows presents and discusses the results obtained from the respondents for the questions based on the objectives of this study. The objectives of this study are aligned to section B of the questionnaire.

### **4.3 Analysis of the results per research objectives**

This section provides a detailed analysis of the respondents' responses to the questions pertaining to the opportunities, structures and attitudes required to implement kaizen costing successfully, advantages of implementing kaizen costing, attributes of management and employees to successfully implement kaizen costing and any disadvantages resulting from the introduction of kaizen costing. These questions were covered in the section B of the questionnaire. These questions are aligned to this study's research objectives (as outlined in section 4.1 in this chapter). The results based on data collected for section B of the questionnaire are discussed and presented, logically and in a simple manner, in Tables 4.4 – 4.24.

In the tables that are presented, it can be noted that in almost all tables, the median is 4.000. This indicates that the middle point in the analysis is “agree” and accordingly is not commented on further.

The following section presents and discusses the results based on questions on the opportunities offered by kaizen costing.

#### **4.3.1 The opportunities offered by kaizen costing (objective 1)**

This section provides the respondents' perspectives in terms of the opportunities offered by kaizen costing in the eThekweni Municipality. It addresses the first objective of this study, i.e. to examine respondents' perspectives of opportunities regarding the implementation of kaizen costing at the Water and Sanitation and Electricity Departments in the eThekweni Municipality. The statements that are examined in this section include: waste elimination, processes and systems in the municipality, productivity, customer satisfaction, culture of collaborative learning, competitiveness and creativity. The statements relating to the respondents' levels of agreement with the opportunities offered by kaizen costing are coded in Table 4.4 below. The results of respondents' level agreement with the opportunities offered by kaizen costing are presented in Tables 4.5 – 4.8. The presentation of the results in Tables 4.5 – 4.8 focuses on analysing the respondents' responses in term of total sample, gender, non-managers and managers.

<b>Table 4.4 Statements relating to the respondents' level agreement with the opportunities offered by kaizen costing</b>	
<b>Statement</b>	<b>Code</b>
Waste elimination will be improved through implementing kaizen costing	B7
Processes will be improved through implementing kaizen costing	B8
Systems will be improved through implementing kaizen costing	B9
Productivity will be improved through implementing kaizen costing	B10
Implementing kaizen costing will improve customer satisfaction	B11
Implementing kaizen costing will develop an organizational culture of collaborative learning at all levels of the company	B12
Competitiveness of this department will improve through implementing kaizen costing	B13
My creativity will be encouraged in this department through kaizen costing	B14

The codes provided in the table above are aligned to the question numbering in the questionnaire. The letter B in the code represents the section the statement relate to in the questionnaire. The number in the code represents the corresponding question number in the questionnaire. The explanation of the coding used in Tables 4.9, 4.14 and 4.19 is the same as for Table 4.4.

#### **4.3.1.1 Analysis of the total sample with respect to the opportunities offered by kaizen costing**

Table 4.5 provides a summary of the responses illustrating the views of the respondents on the opportunities that might result from implementing kaizen costing in the eThekweni Municipality. The presentation in this table is based on the total sample of the respondents. The mean, median and the standard deviation are also presented for each department to aid clarity on the total sample.

Statements	Total sample (Water and Sanitation) n = 199			Total sample (Electricity) n = 45			Total n = 244			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed)
B7	3.8090	4.00	0.70619	4.0444	4.00	0.85162	3.8525	4.00	0.73895	-2.184	0.029 <sup>2</sup>
B8	3.8794	4.00	0.70748	4.1778	4.00	0.71633	3.9344	4.00	0.71708	-2.479	0.013 <sup>2</sup>
B9	3.8794	4.00	0.70031	4.1333	4.00	0.72614	3.9262	4.00	0.71051	-2.103	0.035 <sup>2</sup>
B10	3.7839	4.00	0.70248	4.0000	4.00	0.63960	3.8238	4.00	0.69514	-1.834	0.067
B11	3.7538	4.00	0.80068	3.8444	4.00	0.73718	3.7705	4.00	0.78867	-0.506	0.613
B12	3.7035	4.00	0.82727	4.0222	4.00	0.75344	3.7623	4.00	0.82205	-2.279	0.023 <sup>2</sup>
B13	3.7487	4.00	0.73662	3.9556	4.00	0.76739	3.7869	4.00	0.74513	-1.539	0.124
B14	3.8392	4.00	0.78127	3.9333	4.00	0.80904	3.8566	4.00	0.78562	-0.678	0.498

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>p values are <0.05 and are therefore statistically significant.  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

Table 4.5 shows that the overall respondents' views regarding opportunities offered by kaizen costing are all positive. This is because the mean scores approximating 4 or more tend to show higher levels of agreement. This means that both managers and non-managers in both departments are in agreement with the opportunities that are offered by kaizen costing. These results are similar to the findings of Wu and Chen's (2006) study and Jayeola, Sokefun and Oginni's (2012) study. As mentioned in chapter 2 of this study, the findings of Wu and Chen's (2006) study revealed that employee creativity is improved through kaizen costing. Similarly, the findings of Jayeola, Sokefun and Oginni's (2012) study revealed that waste elimination can also be improved through the application of kaizen costing.

Table 4.5 shows that all of the statements for the Electricity Department show higher levels of agreement (i.e. mean scores were higher) when compared to the Water and Sanitation Department. The strongest agreement is in respect of the 'processes will be improved through implementing kaizen costing' (B8) (mean =3.9344). This is followed by 'systems will be improved through implementing kaizen costing' (B9) (mean = 3.9262).

The Mann-Whitney U test was conducted to identify if there are any variations in the manner in which the respondents answered the questions in this section. The results of this test showed that there is variation in the respondents' answers. This variation proved to be statistically significant for statements B7 (Waste elimination will be improved through implementing kaizen costing), B8 (Processes will be improved through implementing kaizen costing), B9 (Systems will be improved through implementing kaizen costing) and B12 (Implementing kaizen costing will develop an organizational culture of collaborative learning at all levels of the company) at  $p = 0.029$ ,  $p = 0.013$ ,  $p = 0.035$  and  $p = 0.023$ , respectively. This means that half of the opportunities offered by kaizen costing, as outlined in this section, are perceived differently by the managers when compared to the non-managers. The mean score for statement B14 (My creativity will be encouraged in this department through kaizen costing) is 3.8566. The results based on statement B14 are similar to Mândru and Dan's (2012) view of the employee creativity but quite contradictory to the findings of McDermott and Stock's (1999) study. McDermott and Stock (1999) found that employee creativity is one of the characteristics of the developmental culture, however developmental culture is not directly associated with implementing kaizen costing successfully. Kaizen costing is perceived as more useful and successful in an organisation that is group culture oriented and not developmental culture oriented.

The employee perspectives of the productivity (B10) agree with the results of Kaur's (2014) and Cook's (2008) studies. Kaur's (2014) and Cook's (2008) studies stressed that kaizen costing relies heavily on employee empowerment and that employee empowerment in terms of decision making enhances productivity. The results obtained based on statement B12 (mean = 3.7623) also shown similar findings to Cook's (2008) study. Cook's (2008) study found that kaizen costing plays a major role in improving the competitiveness of an organisation.

Further to the analysis of the total sample based on the respondents' perspectives of the opportunities offered by kaizen costing, the following section covers the results of the analysis based on the gender profiles of the respondents.

### 4.3.1.2 Analysis of gender profiles of the respondents with respect to the opportunities offered by kaizen costing

The respondents' perspectives of the opportunities offered by kaizen costing are further presented and analysed according to the respondents' gender profiles. This analysis is done to identify if there are any patterns or differences that might exist in respondents' responses in terms of their gender profile. The results are presented in Table 4.6. Table 4.6 takes the form of presenting the mean, median and standard deviation of the males, females and the total sample. The Mann-Whitney U test is also presented to identify if there are any statistically significant difference in mean scores between males and females.

Statements	Male n = 128			Female n = 116			Total n = 244			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed) <sup>2</sup>
B7	3.8438	4.0000	0.72565	3.8621	4.0000	0.75638	3.8525	4.0000	0.73895	-0.597	0.551
B8	3.9609	4.0000	0.72527	3.9052	4.0000	0.70991	3.9344	4.0000	0.71708	-0.455	0.649
B9	3.9453	4.0000	0.75617	3.9052	4.0000	0.65910	3.9262	4.0000	0.71051	-0.485	0.627
B10	3.7734	4.0000	0.70112	3.8793	4.0000	0.68721	3.8238	4.0000	0.69514	-1.448	0.148
B11	3.6953	4.0000	0.83768	3.8534	4.0000	0.72537	3.7705	4.0000	0.78867	-1.641	0.101
B12	3.7188	4.0000	0.85054	3.8103	4.0000	0.79031	3.7623	4.0000	0.82205	-1.017	0.309
B13	3.7266	4.0000	0.76039	3.8534	4.0000	0.72537	3.7869	4.0000	0.74513	-1.411	0.158
B14	3.8203	4.0000	0.78804	3.8966	4.0000	0.78441	3.8566	4.0000	0.78562	-0.829	0.407

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>All p values are >0.05 and are therefore statistically insignificant.  
 A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

Upon examining the responses of participants' perspectives of opportunities offered by kaizen costing in terms of their gender profile, as shown in Table 4.6, all mean scores approximate 4. This indicates that the respondents mainly agree in their assessment of the statements/questions. The females' mean scores are higher than that of the males, except for the two statements on opportunities, i.e. kaizen costing will improve of systems (B9); and kaizen costing will improve processes (B8) where the mean scores



were both 3.9052 for the female group. The Mann Whitney U-test, on a gender basis, showed that all p values are greater than 0.05 and therefore there are no significant statistical differences between the mean scores of the males and females. This test shows that the gender profiles of the respondents do not play any role in terms of the opportunities offered by kaizen costing.

#### 4.3.1.3 Analysis of non-managers' responses with respect to the opportunities offered by kaizen costing

The results obtained from the respondents based on opportunities offered by kaizen costing are further presented and analysed according to staff occupations. In this section, the focus is based on non-managers. This information is presented in Table 4.7 below.

<b>Table 4.7: Respondents' level of agreements with the opportunities offered by kaizen costing: Non-managers</b>											
Statements	Non-managers (Water and Sanitation) n = 183			Non-managers (Electricity) n = 42			Total n = 225			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed)
B7	3.7923	4.0000	0.69579	4.0238	4.0000	0.86920	3.8356	4.0000	0.73471	-2.091	0.037 <sup>2</sup>
B8	3.8579	4.0000	0.71216	4.1667	4.0000	0.72974	3.9156	4.0000	0.72394	-2.438	0.015 <sup>2</sup>
B9	3.8689	4.0000	0.69871	4.1429	4.0000	0.71811	3.9200	4.0000	0.70887	-2.207	0.027 <sup>2</sup>
B10	3.7650	4.0000	0.70670	4.0000	4.0000	0.62470	3.8089	4.0000	0.69688	-1.943	0.052
B11	3.7486	4.0000	0.79295	3.8333	4.0000	0.72974	3.7644	4.0000	0.78067	-0.412	0.681
B12	3.6995	4.0000	0.82698	4.0238	4.0000	0.74860	3.7600	4.0000	0.82115	-2.229	0.026 <sup>2</sup>
B13	3.7541	4.0000	0.74101	3.9524	4.0000	0.76357	3.7911	4.0000	0.74756	-1.414	0.157
B14	3.8306	4.0000	0.78358	3.9048	4.0000	0.82075	3.8444	4.0000	0.78931	-0.481	0.630

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup> p values are <0.05 and are therefore statistically significant.  
 A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

Table 4.7 shows that the results on the examination of the opportunities offered by kaizen costing in respect of all non-managers also approximate or exceed 4 for all

statements. This means that, on average, non-managers are in agreement with the opportunities that are offered through implementation of kaizen costing. All mean scores of the non-managers in the Electricity Department are higher than those of non-managers in the Water and Sanitation Department. This is an indication that, although the respondents in the Water and Sanitation Department, on average, mainly agree on the opportunities offered by implementing kaizen costing, the respondents' agreements in the Electricity Department are stronger.

The Mann-Whitney U test shows a significant statistical difference at  $p < 0.05$  in respect of the responses pertaining to waste elimination (B7), improved processes (B8), improved systems (B9) and development of organisational culture for collaborative learning (B12). This indicates that the non-managers in Electricity Department support for these statements is statistically significantly higher than the non-managers in the Water and Sanitation Department.

The analysis of the opportunities offered by kaizen costing continues in the following section. However, focus of the following section is on managers' perspectives.

#### **4.3.1.4 Analysis of managers with respect to the opportunities offered by kaizen costing**

The other category of employee occupation that the results on opportunities offered by kaizen costing are presented and discussed is managers. The mean, standard deviation and median for the responses obtained from managers is presented, for each department and total sample of managers, in Table 4.8 below.

<b>Table 4.8: Respondents' level of agreements with the opportunities offered by kaizen costing: Managers</b>									
Statements	Managers (Water and Sanitation) n = 16			Managers (Electricity) n = 3			Total n = 19		
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation
B7	4.0000	4.0000	0.81650	4.3333	4.0000	0.57735	4.0526	4.0000	0.77986
B8	4.1250	4.0000	0.61914	4.3333	4.0000	0.57735	4.1579	4.0000	0.60214
B9	4.0000	4.0000	0.73030	4.0000	4.0000	1.00000	4.0000	4.0000	0.74536
B10	4.0000	4.0000	0.63246	4.0000	4.0000	1.00000	4.0000	4.0000	0.66667
B11	3.8125	3.5000	0.91059	4.0000	4.0000	1.00000	3.8421	4.0000	0.89834
B12	3.7500	3.5000	0.85635	4.0000	4.0000	1.00000	3.7895	4.0000	0.85498
B13	3.6875	4.0000	0.70415	4.0000	4.0000	1.00000	3.7368	4.0000	0.73349
B14	3.9375	4.0000	0.77190	4.3333	4.0000	0.57735	4.0000	4.0000	0.74536

Notes:  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

The Mann-Whitney U test was not used for the analysis of the responses in respect of managers as the total sample of managers in the Electricity Department compared to the Water and Sanitation Department is too small for any meaningful statistical testing and conclusions. Hence only a comparison and contrast for managers' responses in the two departments is done. The mean scores for the responses of the respondents in the Electricity Department are all equal to or greater than 4. This is an indication that the managers in the Electricity Department are very positive that the opportunities offered by kaizen costing can be realised in the municipality. The strong agreement with the statements relating to opportunities offered by kaizen costing in respect of the views of the managers in the Water and Sanitation Department are: waste elimination (B7), processes (B8), systems (B9), and productivity (B10). Although the mean scores for other statements relating to the opportunities offered by kaizen costing are not as high as the ones mentioned above, they also approximate 4 (which is also an indication of positive agreement with the statement).

However, for two of the statements (B11 and B12), the median score for the managers (Water and Sanitation Department) is 3.5 (below the 4.0000 shown in all other tables). This indicates that for these respondents their agreement level was below "agree", but due to the small number of respondents, this was not tested for significant differences.

#### **4.3.1.5 Summary of the results pertaining to objective 1 (opportunities offered by kaizen costing)**

The overall patterns observed for the entire analysis of respondents' perspectives of the opportunities offered by kaizen costing reveals that, irrespective of gender or employee occupation or department to which employee belongs, most respondents are very positive that implementing kaizen costing will benefit the eThekweni Municipality. However, there is stronger agreement in the Electricity Department compared to the Water and Sanitation Department. The possible reason for this might be that the respondents at the Electricity Department were very eager to know more about kaizen costing. Hence the researcher spent more time in Electricity Department explaining what kaizen costing is and how it may benefit the organisation. In addition, the Electricity Department had fewer respondents compared to the Water and Sanitation Department and this made it easy for the researcher to explain in detail without spending too much time in this department. This might have facilitated more understanding of kaizen costing to the respondents in the Electricity Department.

The following section presents and discusses the results based on the structures and attitudes that are required to implement kaizen costing.

#### **4.3.2 The structures and attitudes that are required to implement kaizen costing (objective 2)**

The second objective of this study is also addressed through the responses obtained from the respondents. This objective is based on the examination of the structures and attitudes that are required to implement kaizen costing. The statements examined by this objective includes employee positions in association with their skills, the employee preferences in terms of the roles they play, co-workers attitudes, the employee's responsibility in terms of creating a learning environment, employee views of how their ideas are being valued, the manner in which employees relate to other employees, the role played by teamwork towards achieving employee's organisational goals, the code of ethics, employee empowerment and the organisational culture. The respondents' levels of agreement with the structures and attitudes required to implement kaizen

costing are presented in Tables 4.10 – 4.13. The questions/statements that relate to the analysis presented in Tables 4.10 – 4.13 are coded as shown in Table 4.9 below.

<b>Table 4.9: Codes of statements/question that relate to structures and attitudes required to implement kaizen costing</b>	
<b>Statements</b>	<b>Code</b>
Employees are placed in the right positions in terms of their skills	B15
The role I play in my position aligns with what I like	B16
My co-workers have attitudes of positivity	B17
I take responsibility for creating an environment in which I can learn	B18
My ideas are valued in this department	B19
Employees relate to other employees positively	B20
Teamwork is helpful in achieving my organisational goals	B21
The code of ethics is followed properly in this department	B22
Management is prepared to empower employees	B23
Employees are prepared to be empowered by management	B24
The organisational culture in this department allows kaizen costing to be implemented	B25

#### **4.3.2.1 Analysis of responses as per the total sample with respect to the structures and attitudes required to implement kaizen costing**

Table 4.10 presents the responses illustrating the perspectives of the respondents in respect of structures and attitudes required to implement kaizen costing in the eThekweni Municipality. The analysis of the respondents' views in this section is based on the total sample (n = 244). Although the analysis is based on the total sample for both departments, the discussion also extends to the comparison of the total sample in each department.

Statements	Water and Sanitation n = 199			Electricity n = 45			Total n = 244			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed)
B15	3.8844	4.0000	0.95437	4.2000	4.0000	0.72614	3.9426	4.0000	0.92340	-1.929	0.054
B16	3.9146	4.0000	0.90884	4.3111	4.0000	0.76343	3.9877	4.0000	0.89572	-2.794	0.005 <sup>2</sup>
B17	3.7789	4.0000	0.85361	4.0667	4.0000	0.83666	3.8320	4.0000	0.85613	-2.352	0.019 <sup>2</sup>
B18	4.1809	4.0000	0.69445	4.3111	4.0000	0.70137	4.2049	4.0000	0.69612	-1.278	0.201
B19	3.8894	4.0000	0.77057	4.0000	4.0000	0.76871	3.9098	4.0000	0.76984	-0.888	0.375
B20	3.8492	4.0000	0.83930	3.9556	4.0000	0.67270	3.8689	4.0000	0.81094	-0.521	0.603
B21	4.1256	4.0000	0.65079	4.1111	4.0000	0.53182	4.1230	4.0000	0.62956	-0.363	0.717
B22	3.7839	4.0000	0.85785	3.9111	4.0000	0.76343	3.8074	4.0000	0.84119	-1.003	0.316
B23	3.7035	4.0000	0.95745	3.9556	4.0000	0.82450	3.7500	4.0000	0.93789	-1.741	0.082
B24	3.9146	4.0000	0.73012	4.0667	4.0000	0.65366	3.9426	4.0000	0.71778	-1.373	0.170
B25	3.6583	4.0000	0.86679	3.9111	4.0000	0.79264	3.7049	4.0000	0.85768	-1.963	0.050 <sup>2</sup>

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>p values are <0.05 and are therefore statistically significant.  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

The overall pattern based on the total sample with regards to the respondents' perspectives of structures and attitudes required to implement kaizen costing shows high levels of agreement. In the total sample, all statements in terms of the levels of agreement have mean scores of either approximately or above 4. The mean scores that show high levels of agreement in both departments is in respect of statement B18 (the responsibility the employee plays in terms of creating an environment in which they can learn) and statement B21 (the role teamwork plays in achieving employee's organisational goals). This shows that in both departments the respondents are thinking along the same lines in terms of the teamwork and creation of learning environment.

The mean scores for most statements in the Electricity Department are higher than 4. Although other mean scores in this department are lower than 4, all of them approximate 4. In addition, all medians are 4.0000. The pattern observed on the mean scores in the Water and Sanitation Department is quite different compared to the Electricity Department. Most mean scores for this department are below 4, however the mean scores all approximate 4. This also shows that the respondents in the Water and Sanitation Department agree with the statements on the structures and attitudes with

regards to implementing kaizen costing. Although the mean score for statement B20 (Employees relate to other employees positively) is lower than others, it still shows that the respondents tend to agree on this statement. Since there is no statistically significant difference in the responses for statement B20 (Employees relate to other employees positively), irrespective of the split chosen for the results analysis, the findings of Recht and Wilderom's (1998) that, where employees relate to each other positively, the likely of implementing kaizen costing successfully is very high, are corroborated by this study.

There are statistical significant differences in the manner which the respondents answered the question based on their preferences in terms of the roles they play in the organisation (statement B16) and their co-workers attitudes (statement B17). Both statements B16 and B17 show that the respondents' levels of agreement in the Electricity Department are higher than the respondents' levels of agreement in the Water and Sanitation Department. The possible reason for the statistically significant difference for responses in statement B16 could be that employees in the Water and Sanitation Department lack relevant training and development to perform their daily activities at work. In view of Thomas and Bendixen's (2000) study, this finding could be a setback in the implementation of kaizen costing successfully at the eThekweni Municipality. Thomas and Bendixen's (2000) study holds that continuous training and development of employees is another crucial component for adopting kaizen costing successfully. The statistically significant difference in responses for statement B17 (My co-workers have attitudes of positivity) shows clearly that attitudes of positivity among Water and Sanitation Department employees are significantly lower as the means are below 4. The results of the study by Anand, Chhajed, and Delfin (2012) suggested that positive attitudes among employees are crucial for application of kaizen costing. This could mean that, for kaizen costing to be applied at the municipality successfully, attitudes among employees have to be addressed. The lowest mean score in the total sample is in respect of statement B25 (The organisational culture in this department allows kaizen costing to be implemented) (mean = 3.7049). The responses for this statement also indicate that the respondents had statistically significant different perspectives of the organisational culture in the eThekweni Municipality ( $p = 0.05$ ). The low means for this statement could mean that the respondents feel that the organisational culture in the eThekweni Municipality is insufficient to that required to implement kaizen costing.

The following section presents and discusses the gender profiles of the participants in respect of their perspectives of structures and attitudes required to implement kaizen costing.

#### 4.3.2.2 Analysis of responses using gender split with respect to the structures and attitudes required to implement kaizen costing

The analysis of data collected based on structures and attitudes required to implement kaizen costing is further analysed in terms of gender profiles of the respondents. The mean, median, and standard deviation are presented for males and females in Table 4.11. The Mann-Whitney U test is also presented in this table.

<b>Table 4.11: Respondents' level of agreements with the structures and attitudes required to implement kaizen costing: Gender</b>											
Statements	Male n = 128			Female n = 116			Total n = 244			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed) <sup>2</sup>
B15	3.9766	4.0000	0.90897	3.9052	4.0000	0.94158	3.9426	4.0000	0.92340	-0.556	0.578
B16	4.0781	4.0000	0.79970	3.8879	4.0000	0.98486	3.9877	4.0000	0.89572	-1.297	0.195
B17	3.8125	4.0000	0.83005	3.8534	4.0000	0.88715	3.8320	4.0000	0.85613	-0.347	0.728
B18	4.2422	4.0000	0.68443	4.1638	4.0000	0.70949	4.2049	4.0000	0.69612	-0.922	0.356
B19	3.8594	4.0000	0.73959	3.9655	4.0000	0.80142	3.9098	4.0000	0.76984	-1.141	0.254
B20	3.8984	4.0000	0.81172	3.8362	4.0000	0.81234	3.8689	4.0000	0.81094	-0.670	0.503
B21	4.0859	4.0000	0.62780	4.1638	4.0000	0.63168	4.1230	4.0000	0.62956	-0.964	0.335
B22	3.7813	4.0000	0.85975	3.8362	4.0000	0.82297	3.8074	4.0000	0.84119	-0.375	0.708
B23	3.6484	4.0000	0.95233	3.8621	4.0000	0.91268	3.7500	4.0000	0.93789	-1.720	0.085
B24	3.8672	4.0000	0.74634	4.0259	4.0000	0.67838	3.9426	4.0000	0.71778	-1.625	0.104
B25	3.6016	4.0000	0.89917	3.8190	4.0000	0.79781	3.7049	4.0000	0.85768	-1.750	0.080

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>All p values are >0.05 and are therefore statistically insignificant.  
 A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

Upon examining the total respondents' responses on structures and attitudes required to implement kaizen costing, all the mean scores are approximately equal to 4 and in some cases greater than 4. This indicates that the respondents mainly agree in their assessment of the questions asked based on structures and attitudes. In some cases, there are some



variations in the mean scores for males and females. This is evident in statement B16 (The role I play in my position aligns with what I like) where the mean score for male respondents is 4.0781 and for female respondents is 3.8879. It is also evident in statement B24 (Employees are prepared to be empowered by management) where the mean score (4.0259) for the female respondents is slightly higher than that (mean = 3.8672) of the male respondents. However, despite such variations in responses, the Mann-Whitney U test shows no statistically significant differences in terms of the responses when analysed based on gender. This pattern is also similar to that of the responses obtained from the males and females in respect of opportunities offered by kaizen costing (i.e. no statistically significant differences in responses).

The responses obtained based on the structures and attitudes are analysed based on non-managers in the section that follows.

#### **4.3.2.3 Analysis of non-managers' responses with respect to the structures and attitudes required to implement kaizen costing**

The structures and attitudes required to implement kaizen costing are further presented and discussed in terms of staff occupations. Since the staff occupations were categorised into two groups, the responses obtained from one group, i.e. non-managers, are analysed in this section. Table 4.12 below presents the mean, median and standard deviation for each department as well as for the total sample. The Mann-Whitney U test is also presented in this table in order to identify if there are any statistically significant differences in non-managers' responses in the two departments.

<b>Table 4.12: Respondents' level of agreements with the structures and attitudes required to implement kaizen costing: Non-managers</b>											
Statements	Non-managers (Water and Sanitation n = 183)			Non-managers (Electricity n = 42)			Total n = 225			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed)
B15	3.8579	4.0000	0.96164	4.2143	4.0000	0.71689	3.9244	4.0000	0.92995	-2.149	0.032 <sup>2</sup>
B16	3.9071	4.0000	0.93003	4.3095	4.0000	0.78050	3.9822	4.0000	0.91595	-2.674	0.007 <sup>2</sup>
B17	3.7650	4.0000	0.84806	4.1429	4.0000	0.71811	3.8356	4.0000	0.83697	-2.814	0.005 <sup>2</sup>
B18	4.1749	4.0000	0.66467	4.3095	4.0000	0.71527	4.2000	4.0000	0.67480	-1.379	0.168
B19	3.8798	4.0000	0.75358	4.0714	4.0000	0.63985	3.9156	4.0000	0.73617	-1.345	0.179
B20	3.8251	4.0000	0.83995	3.9762	4.0000	0.64347	3.8533	4.0000	0.80777	-0.895	0.371
B21	4.1093	4.0000	0.63685	4.1190	4.0000	0.50376	4.1111	4.0000	0.61318	-0.088	0.930
B22	3.7596	4.0000	0.86260	3.9286	4.0000	0.74549	3.7911	4.0000	0.84299	-1.354	0.176
B23	3.6721	4.0000	0.97307	4.0000	4.0000	0.76509	3.7333	4.0000	0.94491	-2.153	0.031 <sup>2</sup>
B24	3.9016	4.0000	0.72714	4.0714	4.0000	0.63985	3.9333	4.0000	0.71339	-1.522	0.128
B25	3.6230	4.0000	0.86756	3.9524	4.0000	0.73093	3.6844	4.0000	0.85198	-2.462	0.014 <sup>2</sup>

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>p values are <0.05 and are therefore statistically significant.  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

Table 4.12 shows that all mean scores for the Electricity Department are higher than the mean scores for the Water and Sanitation Department. Although the mean scores for the Water and Sanitation Department are lower than those of the Electricity Department, they all either approximate or are higher than 4. Statements B18 (I take responsibility for creating an environment in which I can learn) and B21 (Teamwork is helpful in achieving my organisational goals) show higher levels of agreement as the mean scores are higher than 4.

The Mann-Whitney U test shows that there are statistically significant differences where p values are < 0.05 for certain statements, i.e. B15 (Employees are placed in the right positions in terms of their skills), B16 (The role I play in my position aligns with what I like), B17 (My co-workers have attitudes of positivity), B23 (Management is prepared to empower employees) and B25 (The organisational culture in this department allows kaizen costing to be implemented), in this section.

One of the respondents mentions, in section C of the questionnaire, that too many graduates are placed in the clerical positions. This might be the reason why responses for statement B15 are statistically significantly different. The themes based on employees being placed in clerical positions is presented and discussed further in section 4.4 of this chapter. Statement B23 shows a statistically significant difference in terms of the responses obtained for it. Stander and Rothmann's (2009) study revealed that the success of kaizen costing relies heavily on employee empowerment. However, since some respondents feel that management is prepared to empower employees, the employees who are neutral or disagree with statement B23 are only perceiving employee empowerment in terms of competency in the work environment.

Menon's (2001) study indicates that, besides the perception of competence in the work environment, individual employees are also psychologically enabled through the perception of control over the work environment and goal internalisation, thus empowering them. It also appears that non-managers are ready to be empowered by management as the results for statement B24 (Employees are prepared to be empowered by management) shows that the non-managers are fairly in agreement with this statement. Given the results of statement B24, it could be concluded that implementing of kaizen costing in the eThekweni Municipality is likely to be successful as the employees are prepared to be empowered by management. However, this is a conclusion based on the condition that kaizen costing is adopted depending on the employees' readiness towards being empowered.

The following section analyses the managers' perspectives of structures and attitudes required to implement kaizen costing.

#### **4.3.2.4 Analysis of managers' responses with respect to the structures and attitudes required to implement kaizen costing**

In this section, the responses to structures and attitudes required to implement kaizen costing are further analysed in terms of managers. Table 4.13 presents the data in the same manner as Table 4.12. However, the data pertaining to the Mann-Whitney U test is not presented in this table because the total sample of managers in the Electricity

Department compared to the Water and Sanitation Department is too small for any meaningful statistical testing and conclusions.

**Table 4.13: Respondents' level of agreements with the structures and attitudes required to implement kaizen costing: Managers**

Statements	Managers (Water and Sanitation n = 16)			Managers (Electricity n = 3)			Total n = 19		
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation
B15	4.1875	4.0000	0.83417	4.0000	4.0000	1.00000	4.1579	4.0000	0.83421
B16	4.0000	4.0000	0.63246	4.3333	4.0000	0.57735	4.0526	4.0000	0.62126
B17	3.9375	4.0000	0.92871	3.0000	2.0000	1.73205	3.7895	4.0000	1.08418
B18	4.2500	4.0000	1.00000	4.3333	4.0000	0.57735	4.2632	4.0000	0.93346
B19	4.0000	4.0000	0.96609	3.0000	2.0000	1.73205	3.8421	4.0000	1.11869
B20	4.1250	4.0000	0.80623	3.6667	3.0000	1.15470	4.0526	4.0000	0.84811
B21	4.3125	4.0000	0.79320	4.0000	4.0000	1.00000	4.2632	4.0000	0.80568
B22	4.0625	4.0000	0.77190	3.6667	3.0000	1.15470	4.0000	4.0000	0.81650
B23	4.0625	4.0000	0.68007	3.3333	3.0000	1.52753	3.9474	4.0000	0.84811
B24	4.0625	4.0000	0.77190	4.0000	4.0000	1.00000	4.0526	4.0000	0.77986
B25	4.0625	4.0000	0.77190	3.3333	3.0000	1.52753	3.9474	4.0000	0.91127

Notes:  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

The overall responses of managers in both departments indicates that they agree with structures and attitudes required to implement kaizen costing. Although the total mean scores for statements B17 (My co-workers have attitudes of positivity) (mean = 3.7895), B19 (My ideas are valued in this department) (mean = 3.8421), B23 (Management is prepared to empower employees) (mean = 3.9474) and B25 (The organisational culture in this department allows kaizen costing to be implemented) (mean = 3.9474) are below 4 they all approximate 4. All other statements have either the total mean score of 4 or above. Even when the analysis is based on managers, statements B18 (I take responsibility for creating an environment in which I can learn) and B21 (Teamwork is helpful in achieving my organisational goals) show high levels of agreements, i.e. mean = 4.2632 for both statements similar to that of the non-managers in Table 4.12. This shows that, in respect of teamwork and employees taking responsibility in creation of a learning environment, managers and non-managers think along the same lines. On this perspective, implementing kaizen costing could be successful.

All mean scores for statements in the Water and Sanitation Department show high levels of agreement except for statement B17 (mean = 3.9375). Besides statement B17, all statements in the Water and Sanitation Department have a mean score of either 4 or above 4. Although the managers' responses in the Electricity Department agree with structures and attitudes required to implement kaizen costing but for statements B17 (mean = 3.0000), B19 (mean = 3.0000), B23 (mean = 3.3333) and B25 (mean = 3.3333) the mean scores indicate that they neither agree nor disagree. The mean scores for other statements (other than B17, B19, B23 and B25) in the Electricity Department are either 4 or approximately 4.

#### **4.3.2.5 Summary of the results pertaining to objective 2 (Structures and attitudes required to implement kaizen costing)**

To conclude this section on objective 2, the overall pattern observed in this section, i.e. the analysis of the results based on the total sample, occupations and gender profiles of the respondents, shows that the respondents are not totally in consensus with certain aspects of the structures and attitudes required to implement kaizen costing. This is because the Mann-Whitney U test produced statistically significant differences for a few responses to statements in this section. These statistical significant differences are in respect of B16 ( $p = 0.005$ ), B17 ( $p = 0.019$ ) and B25 ( $p = 0.050$ ) in the analysis of the responses obtained from the total sample and also in respect of statements B15 ( $p = 0.032$ ), B16 ( $p = 0.007$ ), B17 ( $p = 0.005$ ), B23 ( $p = 0.031$ ) and B25 ( $p = 0.014$ ) in the analysis of non-managers' responses. However, this would not render implementing kaizen costing impossible. Mândru and Dan's (2012) study argued that, irrespective of structures or size of the organisation, kaizen costing can be implemented successfully. Most statements showed high levels of agreements and although some had lower levels of agreement, the means mostly approximated 4.

The following section presents the analysis of the respondents' perspectives of the advantages that could result from implementing kaizen costing in the eThekweni Municipality.

### 4.3.3 The advantages of implementing kaizen costing (objective 3)

Objective 3 of this study is addressed by analysing the answers collected from the respondents in this section of the questionnaire. The intention of this research objective was to get the respondents' perspectives in respect of any advantages that may result from implementing kaizen costing. The statements being examined by this objective include, positive attitudes towards working as a team, the value of the services, achievement of goals, problem solving, improved efficiency, improved quality of the services, continuous improvements in process, and employee initiatives for continuous improvements. The respondents' levels of agreement with the advantages offered by kaizen costing are presented in Tables 4.15 – 4.18. The questions/statements that relate to the data presented in Tables 4.15 – 4.18 are coded in Table 4.14 below. The information presented in these tables are analysed and discussed under each table.

<b>Statements</b>	<b>Code</b>
Kaizen costing will encourage positive attitudes towards working as a team in this department	B26
Kaizen costing will enhance the value of the services provided by this department	B27
Kaizen costing will help this department achieve its goals	B28
Kaizen costing can help the organisation to solve the problems that is currently facing	B29
Kaizen costing will improve the efficiency in which activities are performed in this department	B30
Kaizen costing will improve the quality of the services provided by this department	B31
Kaizen costing will provide continuous improvements in process in this department	B32
Kaizen costing will encourage employees to initiate changes for continuous improvements in this department	B33

The section below provides a detailed discussion and presentation of results obtained from the total sample pertaining to their perspectives of the advantages of implementing kaizen costing in the eThekweni Municipality.

#### 4.3.3.1 Analysis of the total sample with respect to advantages of kaizen costing

The levels of agreement with the advantages of implementing kaizen costing are analysed in this section in terms of the total sample. The mean, median, standard deviation and Mann-Whitney U test are presented in Table 4.15 below.

<b>Table 4.15: Respondents' level of agreements with the advantages offered by kaizen costing: Total sample</b>											
Statements	Water and Sanitation n = 199			Electricity n = 45			Total n = 244			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed)
B26	3.8141	4.0000	0.71110	4.0889	4.0000	0.73306	3.8648	4.0000	0.72161	-2.406	0.016 <sup>2</sup>
B27	3.9296	4.0000	0.70716	4.0667	4.0000	0.61791	3.9549	4.0000	0.69242	-1.124	0.261
B28	3.8543	4.0000	0.75470	4.0667	4.0000	0.71985	3.8934	4.0000	0.75149	-1.622	0.105
B29	3.7789	4.0000	0.82960	3.8667	4.0000	0.75679	3.7951	4.0000	0.81588	-0.482	0.630
B30	3.8643	4.0000	0.75658	3.9778	4.0000	0.72265	3.8852	4.0000	0.75027	-0.887	0.375
B31	3.8794	4.0000	0.79489	3.9333	4.0000	0.65366	3.8893	4.0000	0.76983	-0.201	0.841
B32	3.9347	4.0000	0.73220	4.0444	4.0000	0.60135	3.9549	4.0000	0.71002	-0.859	0.390
B33	3.8291	4.0000	0.82936	3.9111	4.0000	0.73306	3.8443	4.0000	0.81165	-0.626	0.531

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>p value is <0.05 and are therefore statistically significant.  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

The overall pattern when looking at the mean scores for the total sample shows that all respondents are not strongly in agreement with the advantages that are offered by kaizen costing. However, all mean scores for the total sample are approximately equal to 4. The two highest mean scores in the total sample are in respect of statements B27 (Kaizen costing will enhance the value of the services provided by this department) and B32 (Kaizen costing will provide continuous improvements in process in this department). Both these statements had the same mean score of 3.9549. In terms of the respondents' perspectives, kaizen costing carries more weight in terms of being an advantage to enhance the value of the services provided and also in terms of providing continuous improvements in process in both departments. These findings are similar to those of Rof's (2011) study.

Upon examining the responses obtained from the Water and Sanitation Department, it is clear that all respondents are in agreement with the advantages that are offered by kaizen costing. This is because the mean scores for this department are all approximating 4. The same trend is also evident in the Electricity Department. However, in the Electricity Department half of the mean scores were greater than 4. This shows

that the Electricity Department's agreements with the advantages offered by kaizen costing are stronger than those of the Water and Sanitation Department.

Although the mean scores when comparing the two Departments show that the respondents have differing views in their responses, for seven statements, they are not statistically significantly different. This is confirmed by the Mann-Whitney U test results. However, one statement, i.e. B26 (Kaizen costing will encourage positive attitudes towards working as a team in this department), has a statistically significant difference. The difference means that the Electricity Department has a much stronger view than the Water and Sanitation Department that kaizen costing will encourage positive attitudes towards working as a team.

The findings on the advantages of kaizen costing are further presented and discussed in terms of gender profiles of the respondents in the section that follows.

#### **4.3.3.2 Analysis of gender with respect to advantages of kaizen costing**

The results pertaining to the advantages of kaizen costing are further analysed in terms of a gender split in this section. The overall sample for females and males are analysed in terms of mean scores, median, standard deviation and a Mann-Whitney U test. These results are presented in Table 4.16 below.



<b>Table 4.16: Respondents' level of agreements with the advantages offered by kaizen costing: Gender</b>											
Statements	Male n = 128			Female n = 116			Total n = 244			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed) <sup>2</sup>
B26	3.8672	4.0000	0.71399	3.8621	4.0000	0.73303	3.8648	4.0000	0.72161	-0.081	0.935
B27	3.9922	4.0000	0.68155	3.9138	4.0000	0.70488	3.9549	4.0000	0.69242	-0.629	0.530
B28	3.8672	4.0000	0.79735	3.9224	4.0000	0.69970	3.8934	4.0000	0.75149	-0.524	0.600
B29	3.7813	4.0000	0.85975	3.8103	4.0000	0.76799	3.7951	4.0000	0.81588	-0.098	0.922
B30	3.8438	4.0000	0.77802	3.9310	4.0000	0.71899	3.8852	4.0000	0.75027	-0.968	0.333
B31	3.8750	4.0000	0.78369	3.9052	4.0000	0.75732	3.8893	4.0000	0.76983	-0.369	0.712
B32	3.9531	4.0000	0.71935	3.9569	4.0000	0.70269	3.9549	4.0000	0.71002	-0.191	0.849
B33	3.8125	4.0000	0.88514	3.8793	4.0000	0.72418	3.8443	4.0000	0.81165	-0.454	0.650

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>All p values are >0.05 and are therefore statistically insignificant.  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

The total mean scores in this section is exactly the same as the total mean scores presented in Table 4.15. This is because the mean scores for the total sample in Table 4.15 is comprised of one and the same respondents as the total of males and females in Table 4.16. Hence, the interpretation of the total mean scores in this section is the same as that of total mean scores provided for Table 4.15.

The mean scores obtained for responses by males are all approximately equal to 4. This is also the case for females. The mean scores for each statement when comparing the males to females are almost equal for all statements. This means that there is not much difference in terms of the responses between males and females. These results confirm the findings of Manos's (2007) study. Manos's (2007) study noted that the advantages of kaizen costing are through a concerted effort among employees to strive continuous improvements irrespective of their demographic background (gender, status within the organisation, or occupation). This is also evident from the Mann-Whitney U test since

all p values are higher than 0.05. This means that there are no statistically significant differences in responses between males and females.

The following section is based on further analysis of the respondents' perspectives of the advantages of kaizen costing. However, the analysis in the following section is based on non-managers.

#### 4.3.3.3 Analysis of non-managers with respect to advantages of kaizen costing

The responses pertaining to the advantages of kaizen costing obtained from non-managers is presented for each department in the form of mean, median, standard deviation. The total number of respondents also presents the same information as presented in each department but includes an additional column for the presentation of the results of the Mann-Whitney U test. This information is presented in Table 4.17 below.

<b>Table 4.17: Respondents' level of agreements with the advantages offered by kaizen costing: Non-managers</b>											
Statements	Non-managers (Water and Sanitation n = 183)			Non-managers (Electricity n = 42)			Total n = 225			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed)
B26	3.8197	4.0000	0.72267	4.0952	4.0000	0.72615	3.8711	4.0000	0.72967	-2.323	0.020 <sup>2</sup>
B27	3.9235	4.0000	0.70683	4.0476	4.0000	0.62283	3.9467	4.0000	0.69230	-0.964	0.335
B28	3.8415	4.0000	0.74275	4.0714	4.0000	0.71202	3.8844	4.0000	0.74100	-1.738	0.082
B29	3.7650	4.0000	0.82174	3.8810	4.0000	0.70546	3.7867	4.0000	0.80112	-0.593	0.553
B30	3.8525	4.0000	0.74501	4.0000	4.0000	0.66259	3.8800	4.0000	0.73119	-1.051	0.293
B31	3.8634	4.0000	0.79692	3.9048	4.0000	0.65554	3.8711	4.0000	0.77131	-0.073	0.942
B32	3.9126	4.0000	0.72854	4.0238	4.0000	0.60438	3.9333	4.0000	0.70711	-0.849	0.396
B33	3.8197	4.0000	0.83551	3.9286	4.0000	0.67690	3.8400	4.0000	0.80800	-0.706	0.480

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>p value is <0.05 and is therefore statistically significant.  
 A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

The pattern of the total mean scores in Table 4.17 is similar to that of the total mean scores in Table 4.15. All total mean scores approximate 4. This indicates that non-managers do not strongly agree that kaizen costing will offer the mentioned advantages to the eThekweni Municipality. The lowest total mean score is in respect of statement B29 (Kaizen costing can help the organisation to solve the problems that is currently facing) (mean = 3.7951). Although the total mean score for statement B29 is the lowest, it still indicates that the respondents are in agreement that kaizen costing will help to solve the problems faced by the eThekweni Municipality. The reason for the total mean of statement B29 to be the lowest could be that the respondents are not confident enough about how kaizen costing works. Certain respondents indicated that this research study should have provided a thorough description of how kaizen costing will be applied and benefit the eThekweni Municipality before being asked to fill in the questionnaire.

All mean scores in both departments are greater than or approximate 4. This trend is similar to that of the mean scores of responses in respect of opportunities offered by kaizen costing and structures and attitudes required to implement kaizen costing, as discussed in the previous sections. All mean scores for the Electricity Department are higher than those of the Water and Sanitation Department. This means that the non-managers in the Electricity Department have a stronger belief that kaizen costing will result in advantages for the organisation.

Similar to the analysis of the mean scores for the advantages of kaizen costing in respect of the gender profiles of the respondents, the mean scores for responses pertaining to statements B27 (Kaizen costing will enhance the value of the services provided by this department) and B32 (Kaizen costing will provide continuous improvements in process in this department) are the highest when the analysis is based only on non-managers' responses. Although the mean scores for the Electricity Department are all higher than the mean scores of the Water and Sanitation Department, the Mann-Whitney U test shows no statistically significant differences between the responses provided by respondents in two Departments for statements B27 - B33. However, only one statement, i.e. B26 (Kaizen costing will encourage positive attitudes towards working as a team in this department), shows a statistically significant difference ( $p = 0.020$ ).

In the following section, the responses based on the managers' perspectives of the advantages of kaizen costing are analysed.

#### 4.3.3.4 Analysis of managers with respect to advantages of kaizen costing

The results of obtained from the respondents about advantages of kaizen costing are analysed on basis of managers in this section. Since the total sample of managers in the Electricity Department was not large, the Mann-Whitney U test was not used. The presentation and analysis of the results on this section is therefore based on the mean, median and standard deviation for each department as well the total sample of managers. This information is presented in Table 4.18.

Statements	Managers (Water and Sanitation n = 16)			Managers (Electricity n = 3)			Total n = 19		
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation
B26	3.7500	4.0000	0.57735	4.0000	4.0000	1.00000	3.7895	4.0000	0.63060
B27	4.0000	4.0000	0.73030	4.3333	4.0000	0.57735	4.0526	4.0000	0.70504
B28	4.0000	4.0000	0.89443	4.0000	4.0000	1.00000	4.0000	4.0000	0.88192
B29	3.9375	4.0000	0.92871	3.6667	4.0000	1.52753	3.8947	4.0000	0.99413
B30	4.0000	4.0000	0.89443	3.6667	4.0000	1.52753	3.9474	4.0000	0.97032
B31	4.0625	4.0000	0.77190	4.3333	4.0000	0.57735	4.1053	4.0000	0.73747
B32	4.1875	4.0000	0.75000	4.3333	4.0000	0.57735	4.2105	4.0000	0.71328
B33	3.9375	4.0000	0.77190	3.6667	4.0000	1.52753	3.8947	4.0000	0.87526

Notes:  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

Upon examination of the responses of managers in terms of advantages offered by kaizen costing, it is evident from the mean scores in each department that managers' levels agreement with the advantages are stronger than the non-managers. The reason for this is that almost all mean scores in each department are greater 4. The statement with the highest mean score is B32 (Kaizen costing will provide continuous improvements in process in this department) (mean = 4.2105). This pattern is the same as with the analysis of the advantages of kaizen costing based on non-managers, total sample and gender profile. The second statement that managers had high levels of agreement than the non-managers is in B31 (Kaizen costing will improve the quality of the services provided by this department) (mean =4.1053). B27 (Kaizen costing will enhance the value of the services provided by this department) (mean = 4.0526) is the

third highest in terms of the mean scores. The overall pattern observed between managers and non-managers is that managers are more optimistic about the advantages offered by kaizen costing than non-managers. This pattern was also observed in the analysis of responses obtained for the opportunities and structures and attitudes.

#### **4.3.3.5 Summary of the results pertaining to objective 3 (Advantages of implementing kaizen costing)**

The overall observation based on the responses obtained from respondents (split according to gender, occupation and total sample) regarding the advantages offered by kaizen costing shows that the levels of agreement are mainly agree. This means that the respondents are in agreement with the advantages that might be offered by kaizen costing if it is implemented in the eThekweni Municipality. The comparison of the responses in Tables 4.15, 4.17 and 4.18 between the Electricity Department and Water and Sanitation Department show higher level agreement in the Electricity Department. Most mean scores in the Electricity Department are higher than the means scores in the Water and Sanitation Department. This could have resulted from the fact that communication in a small group compared to a larger group of employees is facilitated more easily. Facilitating team spirit is easier where there is a smaller number of employees in a group compared to a group with larger number of employees. This also could be the cause for higher levels of agreement in the Electricity Department.

The following section presents, analyses and discusses the respondents' perspectives with respect to employee and management attributes towards successful implementation of kaizen costing.

#### **4.3.4 The employee and management attributes towards successful implementation kaizen costing (objective 4)**

This section relates to the fourth objective of the current study. This objective is achieved by analysing the data collected from the respondents at the eThekweni Municipality. The variables that are examined by this objective include, new systems intended to improve organisational performance, employee encouragement to come up

with new ideas, employee initiatives towards continuous improvement, delegation of authority, employee involvement in decision making, initiatives to encourage teamwork, employee potential toward activities of continuous improvements, adapting to change to kaizen costing, and commitment to learning and gaining knowledge. The respondents' level of agreement with the employee and management attributes towards successful implementation kaizen costing are presented in Tables 4.20 – 4.23. The questions/statements that relate to the analysis presented in Tables 4.20 – 4.23 are coded in Table 4.19 below.

<b>Table 4.19: Codes of statements/questions that relate to employee and management attributes towards successful implementation of kaizen costing</b>	
<b>Statements</b>	<b>Code</b>
Management welcomes new systems that are intended at improving organisational performance	B34
Management encourages employees to come up with new ideas	B35
Management is committed to supporting employee initiatives in all respects of continuous improvement	B36
Management delegates authority to employees when necessary	B37
Management involves employees in decision making in this department	B38
There are initiatives undertaken by management in this department to encourage teamwork	B39
Employees have the potential to engage in activities that relate to continuous improvements in this organisation	B40
Employees are used to the current systems of this department, however they will be able to adjust to the change to kaizen costing	B41
Employees are committed to learning in an attempt to get more knowledge in their field of work within this department	B42

The section that follows presents and discusses the total sample in respect of the respondents' perspectives of the employee and management attributes towards the successful implementation of kaizen costing.

#### **4.3.4.1 Analysis of the total sample with respect to employee and management attributes towards the successful implementation of kaizen costing**

The data obtained from the total sample in respect of employee and management attributes towards the successful implementation kaizen costing is analysed in this section. The analysis takes the form of presenting and discussing the mean, median and

standard deviation for each statement/question in each department. The analysis of the total sample also takes the same format but, in addition, includes the Mann-Whitney U test. This information is presented in Table 4.20 below.

<b>Table 4.20: Respondents' level of agreements with the employee and management attributes towards successful implementation of kaizen costing: Total sample</b>											
Statements	Water and Sanitation n = 199			Electricity n = 45			Total n = 244			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed)
B34	3.8492	4.0000	0.79607	4.0000	4.0000	0.60302	3.8770	4.0000	0.76527	-1.122	0.262
B35	3.7186	4.0000	0.92179	3.8667	4.0000	0.66058	3.7459	4.0000	0.88016	-0.829	0.407
B36	3.6181	4.0000	0.95604	3.9111	4.0000	0.70137	3.6721	4.0000	0.92021	-2.025	0.043 <sup>2</sup>
B37	3.7789	4.0000	0.92188	3.9778	4.0000	0.49949	3.8156	4.0000	0.86234	-1.069	0.285
B38	3.5327	4.0000	1.05298	3.8889	4.0000	0.74536	3.5984	4.0000	1.01154	-2.006	0.045 <sup>2</sup>
B39	3.7487	4.0000	0.92506	3.9111	4.0000	0.79264	3.7787	4.0000	0.90278	-1.183	0.237
B40	3.8291	4.0000	0.79833	3.9556	4.0000	0.63802	3.8525	4.0000	0.77164	-0.937	0.349
B41	3.9397	4.0000	0.70092	3.8667	4.0000	0.69413	3.9262	4.0000	0.69883	-0.605	0.545
B42	3.9950	4.0000	0.76209	3.9333	4.0000	0.68755	3.9836	4.0000	0.74793	-0.766	0.444

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>p values are <0.05 and are therefore statistically significant.  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

All mean scores in Table 4.20 tend to show that the respondents, on average, are mainly in agreement with the statements. The statement that scored the highest mean for the total sample is B42 (Employees are committed to learning in an attempt to get more knowledge in their field of work within this department) (mean = 3.9836), whereas the one that scored the lowest mean is B38 (Management involves employees in decision making in this department) (mean = 3.5984). The pattern similar to the previous sections in terms of the mean scores in both departments is evident in this section.

On comparison of the mean scores of the two departments, it is noticeable that there is slight difference in the responses of the respondents. However, the Mann-Whitney U test shows no statistically significant difference in the responses, except for two statements, i.e. B36 (Management is committed to supporting employee initiatives in all

respects of continuous improvement) and B38. This indicates that in terms of management commitment to support employee initiatives in respect of continuous improvement, the respondents had differing views. The Mann-Whitney U test show a p value of 0.043 in respect of statement B36 which indicated a statistically significant difference in the respect of the two departments to this particular statement. This may mean that employees in the Electricity Department may have been or are involved in continuous improvement initiatives, but other employees have not. This might also be linked to the findings of Parker and Bradley's (2000) study. Parker and Bradley's (2000) study found that management approaches aimed at continuous improvement initiatives usually fail in the public sector because the public sector organisations are not driven by market forces. The statistically significant difference, as produced by the Mann-Whitney U test, is also evident in statement B38 ( $p = 0.045$ ). Involvement of employees in decision making is another crucial component of kaizen costing, as mentioned by several authors (S. Jackson 1999, Bagraim *et al.* 2007, Cook 2008 and Collier 2012). The findings of this current study on employee involvement in decision making (B38) indicates that it is possible that employees in the Electricity Department are involved in decision making whereas others have not.

The following section further provides a presentation and discussion of the gender profiles of the respondents in terms of their responses to questions/statements relating to employee and management attributes towards successful implementation kaizen costing.

#### **4.3.4.2 Analysis of gender with respect to employee and management attributes towards successful implementation of kaizen costing**

To identify if there is a difference between the male and female responses in terms of the employee and management attributes towards successful implementation kaizen costing, the results are further analysed in terms gender profiles of the respondents. This information is presented in Table 4.21 below.



<b>Table 4.21: Respondents' level of agreements with the employee and management attributes towards successful implementation of kaizen costing: Gender</b>											
Statements	Male n = 128			Female n = 116			Total n = 244			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed) <sup>2</sup>
B34	3.8594	4.0000	0.82035	3.8966	4.0000	0.70253	3.8770	4.0000	0.76527	-0.033	0.974
B35	3.7188	4.0000	0.92163	3.7759	4.0000	0.83496	3.7459	4.0000	0.88016	-0.272	0.786
B36	3.6719	4.0000	0.96481	3.6724	4.0000	0.87254	3.6721	4.0000	0.92021	-0.405	0.685
B37	3.8281	4.0000	0.87042	3.8017	4.0000	0.85689	3.8156	4.0000	0.86234	-0.370	0.712
B38	3.5703	4.0000	1.07721	3.6293	4.0000	0.93744	3.5984	4.0000	1.01154	-0.182	0.855
B39	3.7188	4.0000	0.97962	3.8448	4.0000	0.80869	3.7787	4.0000	0.90278	-0.629	0.529
B40	3.7891	4.0000	0.80012	3.9224	4.0000	0.73604	3.8525	4.0000	0.77164	-1.355	0.175
B41	3.8984	4.0000	0.71914	3.9569	4.0000	0.67749	3.9262	4.0000	0.69883	-0.579	0.563
B42	3.9844	4.0000	0.80338	3.9828	4.0000	0.68503	3.9836	4.0000	0.74793	-0.504	0.614

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>All p values are >0.05 and are therefore statistically insignificant.  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

For each statement, Table 4.21 shows that the mean scores per department between males and females are almost equal. This pattern is observed in all statements in this section. This means that gender does not have an impact on how the respondents responded to the questions. This is also confirmed by the results of the Mann-Whitney U test. This test shows that there is no statistical significant difference in the respondents' answers since all p values are greater than 0.05. This observation is common in all sections above (see Tables 4.6, 4.11 and 4.16) that cover the analysis of gender profiles of the respondents in relation to their perspectives.

The analysis of non-managers' responses to the questions/statements in relation to employee and management attributes towards successful implementation of kaizen costing is covered in the section that follows.

#### 4.3.4.3 Analysis of non-managers with respect to employee and management attributes towards successful implementation of kaizen costing

To get the perspective of employee occupations in respect of responses to questions relating to employee and management attributes towards successful implementation kaizen costing, the results are further analysed by focusing only on non-managers. The analysis in this section also takes the form of presenting and discussing the mean, median, and standard deviation for the responses obtained from the respondents in each department. The total sample of non-managers also takes same form of analysis but, in addition, includes the results of the Mann-Whitney U test. These results are presented in Table 4.22 below.

Statements	Non-managers (Water and Sanitation n = 183)			Non-managers (Electricity n = 42)			Total n = 225			Mann-Whitney U <sup>1</sup>	
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Z	Asymp. Sig. (2-tailed)
B34	3.8415	4.0000	0.77177	4.0000	4.0000	0.58435	3.8711	4.0000	0.74181	-1.270	0.204
B35	3.6940	4.0000	0.90440	3.8571	4.0000	0.64662	3.7244	4.0000	0.86323	-1.020	0.308
B36	3.5956	4.0000	0.94368	3.9286	4.0000	0.63985	3.6578	4.0000	0.90299	-2.273	0.023 <sup>2</sup>
B37	3.7541	4.0000	0.91967	3.9524	4.0000	0.49151	3.7911	4.0000	0.85873	-1.082	0.279
B38	3.4973	4.0000	1.05286	3.8810	4.0000	0.73923	3.5689	4.0000	1.01150	-2.154	0.031 <sup>2</sup>
B39	3.7268	4.0000	0.90280	3.9286	4.0000	0.74549	3.7644	4.0000	0.87759	-1.459	0.145
B40	3.8142	4.0000	0.78335	3.9524	4.0000	0.62283	3.8400	4.0000	0.75664	-1.091	0.275
B41	3.9290	4.0000	0.70351	3.8810	4.0000	0.63255	3.9200	4.0000	0.68972	-0.514	0.608
B42	3.9781	4.0000	0.77712	3.9524	4.0000	0.62283	3.9733	4.0000	0.74952	-0.611	0.541

Notes:  
<sup>1</sup>The p-value from the Kolmogorov-Smirnov test indicates that none of the distributions are normal. Hence non-parametric tests are used.  
<sup>2</sup>p values are <0.05 and are therefore statistically significant.  
 A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

Table 4.22 shows that the respondents, on average, are mainly in agreement with the statements. All total mean scores approximate 4. The statement that scored highest mean on the total sample is B42 (Employees are committed to learning in an attempt to get

more knowledge in their field of work within this department) (mean = 3.9733). This was also the case in the analysis of the total sample in Table 4.20. The statement that scored lowest total mean, i.e. statement B38 (Management involves employees in decision making in this department) also scored the lowest in Table 4.20 (mean = 3.5984).

The mean scores in the Water and Sanitation Department all approximate 4, with the exception of one statement, i.e. B38 (Management involves employees in decision making in this department). The mean score for B38 is 3.4973 which means that almost all non-managers are almost neutral in the levels of agreement with the question in relation to employee involvement in decision making. Only for B34 (Management welcomes new systems that are intended at improving organisational performance) is the mean score in the Electricity Department exactly equal to 4. All other mean scores are approximate 4. Although almost all mean scores approximate 4 in the two departments, there are differences in the manner in the respondents answered the questions. This is evident for the two statements, i.e. B36 (Management is committed to supporting employee initiatives in all respects of continuous improvement) and B38. The Mann-Whitney U test showed statistically significant differences in responses to these two statements, i.e. B36 ( $p = 0.023$ ) and B38 ( $p = 0.031$ ). This means that non-managers in the Electricity Department are statistically significantly more in support of the statements.

The following section concludes the analysis by employee occupation of the respondents' perspectives of employee and management attributes towards successful implementation of kaizen costing by focusing on managers.

#### **4.3.4.4 Analysis of managers with respect to employee and management attributes towards successful implementation of kaizen costing**

The results based on the employee occupations in respect of employee and management attributes towards successful implementation kaizen costing, are further analysed in terms of managers. As explained in the above sections, since the sample of managers in the Electricity Department is too small to make any meaningful statistical interpretations, only a comparison of the mean, median and standard deviation between

the two Departments is done. The mean, median and standard deviation is also presented for the total sample of managers. This information is presented in Table 4.23 below.

Statements	Managers (Water and Sanitation n = 16)			Managers (Electricity n = 3)			Total n = 19		
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation
B34	3.9375	4.0000	1.06262	4.0000	4.0000	1.00000	3.9474	4.0000	1.02598
B35	4.0000	4.0000	1.09545	4.0000	4.0000	1.00000	4.0000	4.0000	1.05409
B36	3.8750	4.0000	1.08781	3.6667	4.0000	1.52753	3.8421	4.0000	1.11869
B37	4.0625	4.0000	0.92871	4.3333	4.0000	0.57735	4.1053	4.0000	0.87526
B38	3.9375	4.0000	0.99791	4.0000	4.0000	1.00000	3.9474	4.0000	0.97032
B39	4.0000	4.0000	1.15470	3.6667	4.0000	1.52753	3.9474	4.0000	1.17727
B40	4.0000	4.0000	0.96609	4.0000	4.0000	1.00000	4.0000	4.0000	0.94281
B41	4.0625	4.0000	0.68007	3.6667	4.0000	1.52753	4.0000	4.0000	0.81650
B42	4.1875	4.0000	0.54391	3.6667	4.0000	1.52753	4.1053	4.0000	0.73747

Notes:  
A Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree was used.

The total mean scores in Table 4.23 are either approximately equal to or greater than 4. This means that the responses to statements in relation to employee and management attributes towards successful implementation kaizen costing are mainly in agreement. This pattern was also the case in the section covering the opportunities and advantages of kaizen costing, and structures and attitudes required to implement kaizen costing. Both statements B37 (Management delegates authority to employees when necessary) (mean = 4.1053) and B42 (Employees are committed to learning in an attempt to get more knowledge in their field of work within this department) (mean = 4.1053) scored the highest mean. Managers strongly agree with regards to delegation of authority to employees and employee commitment to learning in an attempt to get more knowledge in their field of work. The non-managers' responses with respect to statement B42 is similar to that managers. Although the non-managers' perspectives on statement B37 shows a mean not as high that of managers, the trend clearly shows that both managers and non-managers have similar perspectives on these statements. Although the mean

score for statement B36 in Table 4.23 (Management is committed to supporting employee initiatives in all respects of continuous improvement) (mean = 3.8421) is approximating 4, it is the lowest in this section. The analysis of the responses pertaining to statement B36 in the total sample (Table 4.20) and non-managers (Table 4.22) shows statistically significant differences. The mean score in this statement (B36) in Table 4.22 shows that even managers' agreement with this statement are low.

#### **4.3.4.5 Summary of the results pertaining to objective 4 (Employee and management attributes towards successful implementation of kaizen costing)**

The overall analysis of the respondents' perspectives of employee and management attributes towards successful implementation of kaizen costing (objective 4) shows a similar pattern to the sections covering the opportunities of implementing kaizen costing; the structures and attitudes required to implement kaizen costing; and the advantages of implementing kaizen costing. The reason for this is that the mean scores for almost all statements show that the respondents' responses are mainly in agreement with the statements.

The following section covers the last part of the current research objectives. It focuses on analysis of the respondents' perspectives of the disadvantages resulting from the introduction of kaizen costing.

#### **4.3.5 The disadvantages resulting from the introduction of kaizen costing (objective 5)**

The last objective of this study is based on the examination of the respondents' perspectives with respect to any disadvantages that might result from implementing kaizen costing in the eThekweni Municipality. This objective is achieved by analysing the data collected from the respondents at the eThekweni Municipality. This was the only question in section B of the questionnaire that was open-ended. The respondents were asked if they perceived any disadvantages that may result should kaizen costing be introduced in eThekweni Municipality. This question required a yes or no answer. If the respondents answered yes, then they were required explain such disadvantages. Only

26 respondents from the total sample answered yes and the rest answered no. The different answers to this question obtained from the respondents were categorised into relevant themes. The themes and results thereof are presented in Table 4.24 below.

Themes		Water and Sanitation n = 21	Electricity n = 5	Total n = 26	Rank
Resistance to change	Count	12	4	16	1
	% within department	57.1%	80.0%	61.5%	
	% of Total	46.2%	15.4%	61.5%	
Management is not willing to empower and involve junior employees in decision making	Count	3	0	3	2
	% within department	14.3%	0.0%	11.5%	
	% of Total	11.5%	0.0%	11.5%	
Not understanding the entire process	Count	1	1	2	=3
	% within department	4.8%	20.0%	7.7%	
	% of Total	3.8%	3.8%	7.7%	
Management would not use it for the benefit of the employees	Count	2	0	2	=3
	% within department	9.5%	0.0%	7.7%	
	% of Total	7.7%	0.0%	7.7%	
Employees may abuse authority if there are sufficiently empowered	Count	1	0	1	=4
	% within department	4.8%	0.0%	3.8%	
	% of Total	3.8%	0.0%	3.8%	
Useful operating procedure and accountabilities are weak	Count	1	0	1	=4
	% within department	4.8%	0.0%	3.8%	
	% of Total	3.8%	0.0%	3.8%	
It might take too long to realise the benefits of kaizen costing in this organisation	Count	1	0	1	=4
	% within department	4.8%	0.0%	3.8%	
	% of Total	3.8%	0.0%	3.8%	
Totals	Count	21	5	26	
	% within department	100.0%	100.0%	100.0%	
	% of Total	80.8%	19.2%	100.0%	

The majority of the respondents (61,5%) from the sample that answered yes for the perceived disadvantages see the resistance to change as a setback that might occur should kaizen costing be introduced in the eThekweni Municipality. This finding is similar to the results of the study conducted by McDermott and Stock (1999). The next disadvantage that the respondents noted was that management is not willing to empower and involve junior employees in decision making. This was raised by 11,5% of the respondents that answered the question in relation disadvantages. This disadvantage is ranked the second highest to all disadvantages mentioned by the respondents as shown in Table 4.24. This finding is also evident in the section analysing the employee and management attributes towards successful implementation of kaizen costing (statement

B38 (Management involves employees in decision making in this department) above). Although the respondents mentioned other disadvantages as shown in Table 4.24, resistance to change was the main disadvantage resulting from the implementation of kaizen costing.

The following section focuses on the presentation, analysis and discussion of the overall comments obtained from the respondents. The comments are pertaining to the areas that the current research might have not covered.

#### 4.4 Respondents' overall comments

The last section of the questionnaire provided the respondents with an opportunity to make comments on any areas not covered in this research which respondents felt should have been covered. This information is presented in Table 4.25 below. Since this was also an open-ended question, all comments provided by the respondents are grouped into themes, as presented in Table 4.25.

Themes		Water and Sanitation n = 199	Electricity n = 45	Total n = 244	Rank
Did not answer the question but support kaizen costing implementation and believe that it will improve cost management	Count	15	2	17	1
	% within department	7.6%	4.4%	7.0%	
	% of Total	6.2%	0.8%	7.0%	
A thorough description of what kaizen costing is and how it is going to help this organisation.	Count	12	3	15	2
	% department	6.1%	6.7%	6.2%	
	% of Total	4.9%	1.2%	6.2%	
The weakness in current operating systems - mainly the employee accountability and responsibility	Count	3	2	5	3
	% within department	1.5%	4.4%	2.1%	
	% of Total	1.2%	0.8%	2.1%	
Behaviour and attitudes of staff	Count	1	1	2	4
	% within department	0.5%	2.2%	0.8%	
	% of Total	0.4%	0.4%	0.8%	
Did not answer the question but feel that too many graduates are placed in clerical positions	Count	1	0	1	5
	% within department	0.5%	0.0%	0.4%	
	% of Total	0.4%	0.0%	0.4%	
Did answer the question but feel that kaizen costing will be successful if incentives are factored in its implementation	Count	1	0	1	5
	% within department	0.5%	0.0%	0.4%	
	% of Total	0.4%	0.0%	0.4%	
No comment	Count	165	37	202	
	% within department	83.3%	82.2%	83.1%	
	% of Total	67.9%	15.2%	83.1%	
Totals	Count	198	45	243	
	% within department	100.0%	100.0%	100.0%	
	% of Total	81.5%	18.5%	100.0%	

The majority of the respondents (83,1%) did not comment. This means that only 42 respondents (16.9%) made comments. From those who commented, 17 respondents (7%) did not necessarily provide the comments that were required in this section. However, they felt that implementing kaizen costing will improve cost management in this organisation. Fifteen respondents (6,2%) felt that a thorough description of what kaizen costing is and how it is going to help this organisation should have been made. Five respondents (2,1%) felt that this research should have also covered some aspects of the weaknesses in the current operating systems, especially employee accountability and responsibility. Two respondents commented that employee behaviour and attitudes should have been covered in this research. One respondent commented about employee positions, although did not necessarily provide required comments, feeling that too many graduates are placed in clerical positions and another respondent commented that kaizen costing will be successful if incentives are factored into its implementation.

The following section focuses on the presentation, analysis and discussion of the results of Cronbach's Alpha test which was used to test for the reliability of closed-ended questions in section B of the questionnaire.

#### 4.5 Reliability test

Table 4.26 presents the Cronbach's Alpha score for the close-ended questions in section B of the questionnaire.

<b>Table 4.26: Reliability test</b>		
Closed-ended questions - Section B of the questionnaire	Number of questions	Cronbach's Alpha
Opportunities of implementing kaizen costing	8	0.922
Structures and attitudes required to implement kaizen costing	11	0.898
Advantages of implementing kaizen costing	8	0.936
Attributes for the successful implementation of kaizen costing	9	0.913
Overall	36	0.961

The questions that were analysed for reliability were only those which were closed-ended and included in Section B of the questionnaire. Questions from sections A and the open-ended questions in section B were less critical and, therefore, did not warrant further inter - item correlation testing (Wilson and Sapford 2006: 121). The overall



reliability score of 0.961 exceeds the value, i.e. 0.7 to 0.8, that is considered to be satisfactory (Gupta and Gupta 2011: 66) and falls into the range of excellent. This result indicates a high (overall) degree of acceptable, consistent scoring for this research.

The following section provides a summary of all sections analysed, presented and discussed in this chapter.

#### **4.6 Summary**

This chapter covered the presentation, analysis and discussion of the data gathered from the eThekweni Water and Sanitation and Electricity Departments. The findings of this study were discussed and analysed in conjunction with the results of previous studies that examined various aspects of implementing kaizen costing. The discussion in this chapter was aligned to the sections of the questionnaire that were used to gather the data from the participants at the eThekweni Municipality and therefore also aligned to the research objectives. All data gathered for each section was presented in table format. The first section of the questionnaire covered the background and biographical information of the respondents. The discussion in this chapter based on the background and biographical information revealed that all respondents were adequately qualified to comprehend and answer the questions in the questionnaire.

The discussion, analysis and presentation of the results further focused on the research objectives of this study. The questions based on the research objectives of this study were covered in section B of the questionnaire. The data obtained for this section presented the mean, median, standard deviation and Mann-Whitney U test in the tables. Only with the exception of the managers' split was the Mann-Whitney U test not presented. The reason for not testing the level of statistical significant difference in results gathered from managers was that the sample of managers was too low to produce meaningful results for the test. The first split was based on the total sample where the holistic approach to the results analysis was provided. The second split was based on the gender profiles of the respondents. Males and females were fairly represented in the sample. In this split in all sections of the research objectives, there were no statistically significant differences in all the responses provided by the respondents. Hence, it was concluded that gender does not play a role in respondents' perspectives of kaizen costing. The third and fourth split of the analysis was in respect of occupations of the

respondents, i.e. non-managers and managers. The analysis of the findings showed that for certain sections, the non-managers had different perspectives of kaizen costing compared to managers. The Mann-Whitney U test showed many statistically significant differences in the responses of non-managers in the two departments.

Generally, for most statements/questions covered in this section, it was discovered that responses thereof were mainly in agreement since the mean scores were mainly around 4.

The discussion of the results was concluded by analysing the respondents' overall comments pertaining to this research. The majority of the respondents felt that resistance to change might be a major setback to the implementation of kaizen costing at eThekweni Municipality.

The next chapter focuses on summary, conclusions and recommendations for this study.

## CHAPTER 5

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

The previous chapter provided an in-depth presentation and interpretation of the findings obtained from the eThekweni Municipality employees who were selected to participate in this study. The findings were analysed using descriptive statistics. The data was collected through a self-administered questionnaire which comprised predominantly closed-ended questions. This chapter presents the summary and conclusions in terms of how this study's research objectives were attained. The main objective for this study is based on the application of kaizen costing to improve cost management at eThekweni Municipality. Based on the findings of the current study, recommendations are provided. The limitations of this study are also outlined and suggestions for further research are explored in this chapter.

#### 5.2 Summary of the current study

EThekweni Municipality has been experiencing problems in its cost management for quite some time. This has resulted in continuous significant losses incurred in the Water and Sanitation Department and Electricity Department. The municipality has tried various techniques to curb cost management problems in these departments but none has succeeded. The majority of the cost management problems are associated with the application of traditional systems. Certain modern cost management tools are believed to be very effective in curbing cost management inefficiencies. One such tool is the Japanese system called kaizen costing. This system is mainly used by manufacturing organisations to continuously improve their cost management. It can be applied in any organisation. The gap identified in the literature about kaizen costing is that there have been only a few instances where it has been applied in the service sector. This gap in the literature led to the aim of this study.

The aim of this study was to determine if the implementation of kaizen costing can improve cost management inefficiencies faced by the eThekweni Municipality. The aforementioned aim led to the development of the following objectives, as outlined in

chapter 1: To examine respondents' (i.e. managers' and non-managers') perspectives with respect to:

1. opportunities regarding the implementation of kaizen costing at the water and electricity departments of the eThekweni Municipality;
2. the structures and attitudes required to implement kaizen costing successfully;
3. the advantages of implementing kaizen costing;
4. the necessary attributes of management and employees to successfully implement kaizen costing; and
5. any disadvantages resulting from the introduction of kaizen costing.

The research objectives were addressed by the literature review and the empirical results presented in the previous chapter.

The literature review identified the research problem, i.e. there are inefficiencies in cost management at the eThekweni Municipality and as result constant losses are being incurred in the Water and Sanitation and Electricity Departments. The literature review discussed comprehensively the aspects associated with implementation of kaizen costing. This discussion was based on exploring the empirical and conceptual studies conducted nationally and internationally about the implementation of kaizen costing. The broader areas covered in the literature review were based on background to the South African municipalities; the theoretical concept of kaizen costing; the internal environment; the market environment; staff perceptions towards implementing kaizen costing; and lastly, assessing the application of kaizen costing at eThekweni municipality.

To get an insight on the setting of the research problem, the literature review delved deeper into the background to the South African municipalities. Highlighted in the literature review was the Municipal Finance Management Act (MFMA) 56 of 2003 that deals direct with financial management of South African municipalities. Although the MFMA deals with financial management it was found to have also an impact on the cost management at South African municipalities.

The literature review further explored the theoretical concept of kaizen costing within the context of improving cost management. Covered in this section was its nature and definition, its characteristics, its relationship with cost management, and its advantages. The literature review noted that the most crucial components of the application of kaizen costing are mainly based on the internal environment. The main aspects of the internal environment covered in the literature review were: organisational culture, leadership, employee empowerment and the market environment. This was confirmed by empirical and conceptual studies conducted in relation to the implementation of kaizen costing.

The literature review also noted that, although the major aspects of kaizen costing are based on the internal environment, the market environment in terms of how customer demands are treated and how satisfied they are with services provided is also affected. This was also confirmed by empirical and conceptual studies conducted in relation to the implementation of kaizen costing.

The study further explored the implementation of kaizen costing in relation to the South African municipalities. Although the implementation of kaizen costing is mainly applied in the manufacturing sector, the literature indicated that it can be applied in other sectors. Although certain challenges may be experienced when implementing kaizen costing in South African municipalities, the literature showed that it may be implemented successfully.

Lastly, the literature review provided an overview of the sample departments, i.e. the Electricity Department and Water and Sanitation Department that were selected from the eThekweni Municipality for the purposes of this study. In this section, the vision, mission, objectives and operations of the two departments were discussed.

The research methodology provided the logic behind the chosen research method used in order to assess whether implementing kaizen costing can improve cost management in the Water and Sanitation and Electricity Departments in the eThekweni Municipality. It covered the discussion on the research paradigm, a description of the methodological approach adopted, the definition of the population, description and discussion of the sample and sampling method, the discussion of the actual instrument, the description on how data was gathered using the instrument, the response rate, a description of how data was prepared and analysed, the discussion on limitations identified and anticipated potential weaknesses of this study relating to the methodology, sampling, analysis, and

methods, and the description of reliability and validity in the context of this research. This was a quantitative descriptive study which employed the use of questionnaires to collect data.

The target population consisted of 510 employees on 18 January 2017 in the Water and Sanitation Department, whereas the Electricity Department consisted of 48 employees on 26 January 2017. Since the data was collected from every member of the target population in the Electricity Department, this study was viewed as a census study in respect of this department. For the Water and Sanitation Department, the data was collected from a target sample of 272 participants. The questionnaire was used to collect the quantitative data. This was chosen as a research instrument for this study since the responses are gathered in a standardised way and are relatively quick to collect information. It was self-administered to all target participants at the eThekweni Municipality. Before administering the questionnaire, a pilot study was conducted in the eThekweni Municipality and Richfield Graduate Institute of Technology. This helped predict the appropriateness of the sample size, relativity and effectiveness of the study and improve the study's design. The questionnaire responses were analysed using both descriptive and inferential statistics. The descriptive statistics provided an overview of the participants' profile and ascertained their level of agreement with regards to their perspectives of implementation of kaizen costing. The inferential statistics used the Mann Whitney U test to test if there are any statistical significant differences in the mean scores of the respondents to questions pertaining to implementation of kaizen costing. The results of this study were compared to previous empirical and conceptual studies, reviewed in chapter 2, which had also used a questionnaire to assess the implementation of kaizen costing.

### **5.3 Presentation of conclusions based on the findings**

The findings of this study are tailored to the objectives of this study. Hence this section discusses how the objectives were achieved through such findings. As mentioned earlier, the objectives of this study were all addressed by the literature review in chapter 2 and the discussion and presentation of the results in chapter 4.

Objective 1: To examine respondents' perspectives with respect to opportunities regarding the implementation of kaizen costing at the Water and Sanitation and Electricity Departments of the eThekweni Municipality.

As mentioned earlier, the research problem identified that cost management inefficiencies in the eThekweni Municipality has caused several losses. The literature reviewed in chapter 2 revealed that certain opportunities associated with implementing kaizen costing may resolve the cost management inefficiencies that are faced by the municipality. Such opportunities include: improved waste elimination; improved systems and processes; improved productivity; improve customer satisfaction; development of an organisational culture of collaborative learning at all levels of the company; improved competitiveness of the departments; and encouraged employee creativity. The study successfully examined the respondents' perspectives of the opportunities for the application of kaizen costing in eThekweni Municipality. The responses pertaining to the respondents' perspectives of the opportunities were positive. This demonstrates that respondents understood the value of implementing kaizen costing in the eThekweni Municipality. Based on the findings of the study, there are opportunities for successful implementation of kaizen costing towards improving cost management. The results showed that with respect to objective 1, there were no major differences between managers' and non-managers' perspectives of opportunities associated with implementation of kaizen costing.

Objective 2: To examine respondents' perspectives with respect to the structures and attitudes required to implement kaizen costing successfully.

The structures and attitudes examined by this objective included: Employees are placed in the right positions in terms of their skills; the role that employee plays in their position aligns with what they like employee's co-workers have attitudes of positivity; employee take responsibility for creating an environment in which they can learn; employee's ideas are valued in their respective departments; employees relate to other employees positively; teamwork is helpful in achieving employee's organisational goals; the code of ethics is followed properly in each department; management is prepared to empower employees; employees are prepared to be empowered by management; and the organisational culture in each department allows kaizen costing to be implemented.

The literature reviewed in chapter 2 explored the structures and attitudes within the context of implementing kaizen costing and, consequently, focused on objective 2. The results of this study indicated that the structures and attitudes would be suitable for implementation of kaizen costing in the eThekweni Municipality which would provide an opportunity for kaizen costing to be introduced. The responses pertaining to the structures and attitudes mainly had a mean score of approximately 4 (agree). However, the responses pertaining to the statements B16 (The role I play in my position aligns with what I like), B17 (My co-workers have attitudes of positivity) and B25 (The organisational culture in this department allows kaizen costing to be implemented) revealed that the non-managers had different perspectives. Although this may bring about some challenges in the structures and attitudes in the eThekweni Municipality if kaizen costing were to be implemented, according to the results of the study by McDermott and Stock (1999), certain structures and attitudes of employees within the organisation may be reviewed to allow for the successful implementation of kaizen costing. With respect to objective 2, the results indicated that managers' and non-managers' perspectives of the structures and attitudes required to implement kaizen costing were different. However, the difference between managers' and non-managers' perspectives was not major because the responses to the questions pertaining to the structures and attitudes required to implement kaizen costing had the total mean scores of approximately 4.

Objective 3: To examine respondents' perspectives with respect to the advantages of implementing kaizen costing.

The advantages identified that might result from implementing kaizen costing included: Kaizen costing will encourage positive attitudes towards working as a team in this department; Kaizen costing will enhance the value of the services provided by this department; Kaizen costing will help this department achieve its goals; Kaizen costing can help the organisation to solve the problems that is currently facing; Kaizen costing will improve the efficiency in which activities are performed in this department; Kaizen costing will improve the quality of the services provided by this department; Kaizen costing will provide continuous improvements in process in this department; and Kaizen costing will encourage employees to initiate changes for continuous improvements in



this department. Amongst the goals of the eThekweni Municipality is need for improvement in its cost management.

The study was successful in examining the respondent's perspectives of the advantages that might result from implementing kaizen costing at the eThekweni Municipality. This objective was addressed in the literature review covered in chapter 2 of this study and through the empirical findings covered in chapter 4. The responses indicated that the respondents were mainly in agreement with the advantages that may be offered by implementing kaizen costing in the eThekweni Municipality. This is an indication of a common understanding of the advantages of kaizen costing among the respondents. This may increase the likelihood of acceptance of kaizen costing by the eThekweni Municipality employees. The understanding of the advantages of kaizen costing might also facilitate a smooth process of implementing it as noted by Jayeola, Sokefun and Oginni (2012). The results indicated that there were no differences between managers' and non-managers' perspectives of the advantages that might result from implementing kaizen costing.

Objective 4: To examine respondents' perspectives with respect to the necessary attributes of management and employees to successfully implement kaizen costing.

The attributes that were examined by this objective included: Management welcomes new systems that are intended at improving organisational performance; Management encourages employees to come up with new ideas; Management is committed to supporting employee initiatives in all respects of continuous improvement; Management delegates authority to employees when necessary; Management involves employees in decision making in this department; There are initiatives undertaken by management in this department to encourage teamwork; Employees have the potential to engage in activities that relate to continuous improvements in this organisation; Employees are used to the current systems of this department, however they will be able to adjust to the change to kaizen costing; and Employees are committed to learning in an attempt to get more knowledge in their field of work within this department

This objective was addressed in the literature review and by the empirical findings presented in chapter 4. Mainly, the respondents' responses pertaining to the question addressing this objective were in agreement. This indicates that there were no differences between managers' and non-managers' perspectives of the attributes

required to implement kaizen costing successfully. In addition, this indicates that employees' and management's attributes at eThekweni Municipality support the implementation of kaizen costing. Hence, the likelihood of implementing kaizen costing successfully, based on the management and employee attributes is good.

Objective 5: To examine respondents' perspectives with respect to disadvantages resulting from the introduction of kaizen costing.

This objective was to get the perceptions of the respondents with regards to any disadvantages that might result from implementing kaizen costing. It comprised of an open ended question. The respondents' responses were grouped into themes which included: Resistance to change; Not understanding the entire process; Management would not use it for the benefit of the employees; Management is not willing to empower and involve junior employees in decision making; Employees may abuse authority if there are sufficiently empowered; Useful operating procedure and accountabilities are weak; and It might take too long to realise the benefits of kaizen costing in this organisation. This objective was also examined using the empirical findings presented in the literature review. Both managers and non-managers perceived resistance to change as a major disadvantage that might result from implementation of kaizen costing. However, only 28 respondents (11,5% of the total sample) pointed out that certain disadvantages might result from implementing kaizen costing. This number of respondents is not so significant in that it might render implementing kaizen costing impossible. In addition, the advantages outweigh the disadvantages outlined by the respondents. Hence, the implementation of kaizen costing would still go ahead while these disadvantages are addressed. It is possible that kaizen costing could be implemented successfully even though certain disadvantages may be in existence. The results showed that with respect to objective 5, the managers' and non-managers' perspectives of the disadvantages that might result from implementing kaizen costing are similar.

In conclusion, this study's objectives were extensively explored in the literature covered in chapter 2 of this study. The literature review addressed these objectives by reviewing previous empirical and conceptual studies conducted nationally and abroad in public and other sectors. The objectives were further achieved through the empirical finding presented in chapter 4 of this study. In relation to the research problem and the aim of

this study, the overall perspectives of the respondents proved that implementing kaizen costing might be the solution to the cost management problems faced by the eThekweni Municipality.

The section that follows provides the recommendations to the eThekweni Municipality following the empirical findings of this study.

#### **5.4. Implications of the results for eThekweni Municipality**

The reality is that municipalities in South Africa are expected to play a critical role in sustainable co-operative governance, which focuses on effective service delivery responsive to the needs of the community; hence Khoza (2005: 291); and Pillay, Steyn and Sommerville (2013: 117) recommend that modern cost management systems be inculcated into municipalities. This research study contributes to the subject of kaizen costing, with a particular focus on municipalities in South Africa. This study provides evidence that the application of a kaizen costing could help to improve processes and practices in the eThekweni Municipality. Responding to rapid changes in technology, competition and customer demands is not only essential for corporate sector organisations but also for municipalities. The municipalities should also adopt effective cost management approaches similar to those used by the corporate sector in gaining competitive advantage. Mitchell, Nørreklit and Jakobsen (2013: 106) reiterate that treating customer needs as the first priority and creating and managing an organisational culture that supports continuous improvements is of paramount importance. The results of the study show that those who participated in the study view kaizen costing as a best option for the eThekweni Municipality.

#### **5.5 Limitations of the study**

In chapter 3 certain limitations of this study were discussed. However, such limitations were known before the data was collected from the respondents of this study. This section outlines the limitations that were revealed during and after the data collection.

Kaizen costing has not been implemented in eThekweni Municipality. Therefore, it is not known whether kaizen costing would or would not improve cost management. Since this is a cross-sectional study, the long-term impact of adopting kaizen costing is not

known at this point. This is a limitation because certain respondents noted that they would have been able to participate better in this study once they had seen how it impacts on the cost management of the eThekweni Municipality.

Although the pre-testing of the questionnaire indicated that the questions were easy enough to be understood by the respondents, the need to thoroughly describe what kaizen costing is about and how it applied was not raised in the pre-testing. Hence, a limitation is that certain respondents felt that it would have been better had a thorough description of kaizen costing been provided. Some other respondents felt that although the description was provided, they would have understood its application better had a case study about it in an organisation that has applied it successfully been provided. However, to a certain extent, this limitation was minimised as kaizen costing was explained to the respondents and practical examples relevant to the eThekweni Municipality were provided when the questionnaires were administered.

## **5.6 Recommendations for practice**

The results revealed that respondents in the different departments have differing opinions regarding the opportunities offered by kaizen costing. Half the statements relating to opportunities offered by kaizen costing had statistically significant different levels of support. This might be due to the fact that some respondents did not have a thorough understanding of kaizen costing. This is because some respondents wanted a thorough description of kaizen costing to in order for them to understand what it is. Hence, if kaizen costing is to be implemented in the eThekweni Municipality, a comprehensive description of what kaizen costing is, how it works, and how opportunities associated with it can be achieved should be provided.

Some respondents also felt that resistance to change could impede the successful implementation of kaizen costing. Therefore, firstly, the focus for implementing kaizen costing should be on its benefits to the employees and the organisation. Secondly, employees should be trained to help them achieve the desired change. Thirdly, progress should be monitored closely and feedback from employees should be welcomed as well

as making it known to them that any concerns that they might have are being listened to.

With respect to structures and attitudes, the results of this study revealed that there may be a lack employee training and development. Therefore, eThekwini municipality should introduce training and development programmes that are aimed at enhancing employee's skills. Any current training and development programme at the eThekwini Municipality should be reviewed in order to align them to the employees' and organisation's goals.

Some respondents from the non-management sample felt that management is not prepared to empower employees. However, they felt that employees are ready to be empowered by management. On the other hand, the results revealed management responded that they are prepared to empower to employees. This might mean that non-managers perceive employee empowerment differently from how managers perceive it. It might also mean that management is not empowering employees to the extent that employees would feel empowered. Hence, management should review methods of employee empowerment in order for employees to feel empowered.

The results indicated that positivity in employee relations is poor. As this is a major aspect of the organisational culture, it is important that management revise positivity in employee relations before kaizen costing is implemented.

Some respondents noted that too many graduates are placed in clerical positions. This could mean that graduates are being prevented from realising their full potential in terms of their subject matter expertise. Therefore, eThekwini Municipality should revisit its staff occupations in terms of their qualifications. The revisit could take the form of assigning the graduates to the occupation relevant to their qualifications. If all relevant occupations are filled, then they could be assigned to assistant positions relevant to their qualifications.

The overall observation from the respondents' perspectives of kaizen costing is that implementing may curb the cost management inefficiencies that the eThekwini Municipality faces. Hence, the overall recommendation is that eThekwini Municipality should consider implementing kaizen costing.

As this section has outlined the recommendations for practice, the following section builds on these recommendations and provides suggestions for further research.

### **5.7 Suggestions for further research**

The study has confirmed that respondents are of the strong view that kaizen costing will improve cost management in the eThekweni Municipality. Hence, the recommendations for future research include the examination of the impact of kaizen costing in the Electricity and Water and Sanitation Departments in the eThekweni Municipality. Further research could be in a form of a longitudinal study to produce more reliable and accurate results.

Since this a case study based on the Electricity and Water and Sanitation Departments in the eThekweni Municipality, the results cannot be generalised to other departments within the eThekweni Municipality. It is therefore suggested that the same study be conducted in all departments in eThekweni Municipality. Similar research can even be expanded to entire municipalities in South Africa and service industries other than the municipalities.

In the literature review it was noted that kaizen costing can also be used to position the organisation in a competitive edge. However, assessing kaizen costing in terms of the role it plays in completion was not the focus of this study. Therefore, further research could be conducted to explore kaizen costing's impact on the competitiveness of an organisation. In relation to the municipal context, further research could assess kaizen costing's impact on service delivery.

The section that follows provides an overview of this study.

### **5.8 Overview**

The aim of this research project was to assess if implementing kaizen costing could improve cost management at the Electricity and Water and Sanitation Departments of the eThekweni Municipality. Kaizen costing is applied mostly in the manufacturing sector. However, continuously changing conditions in the service sector requires such a sector to use different approaches in order to remain competitive and relevant. Since

municipalities are also driven by customer demands, they are not immune to such changes. Pillay, Steyn and Sommerville (2013: 111 - 113) points out that municipalities need to adopt modern approaches and practices to curb cost management inefficiencies. Kaizen costing is effective in creating an environment that strives for continuous improvements especially in cost management to stay competitive in modern world. The findings of the study suggest that it is possible for the eThekweni Municipality to adopt kaizen costing with an intention improve its cost management.

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## APPENDIXES

### Appendix A: Research instrument

#### Questionnaire

**“Implementation of kaizen costing towards improving cost management at the Water and Sanitation and Electricity Departments of the eThekweni Municipality, KwaZulu-Natal”**

**Section A – Demographic information. Please tick only one block in the following questions.**

1. How old are you?

Between 18 and 30	Between 31 and 40	Between 41 and 50	Over 50

2. What is your gender?

Male	Female

3. Please indicate your respective department.

Water and Sanitation Department	Electricity Department

4. Please indicate your highest level of qualification.

Grade 12 (Matric)	Certificate after Matric	Diploma	Degree	Honours	Other

5. For how long have you been working in this organisation?

Less than 1 year	1 to 5 years	6 to 10 years	More than 10 years

6. Indicate into which category your occupation in this department best fits:

Manager	
Non-manager	

#### Section B

Read the following abstract before answering section B questions.

Kaizen is a Japanese term which refers to continuous improvements. Kaizen costing refers to continuous improvements in cost management of an organisation. The purpose of kaizen costing is to continuously make small improvements in operations of the organisation that will result in cost reductions. The main objectives of kaizen costing are: to improve performance and competitiveness of the organisation, to improve quality of the organisation's products and services; and to add value while eliminating waste at the same time. Technology, company culture, productivity, safety and leadership are not the focus of kaizen costing but can also be

improved through the use of kaizen costing. Implementing kaizen costing relies heavily on employee empowerment and utilisation of resources available in the organisation.

Please indicate your level of agreement with the following statements by ticking in the appropriate column. Choose only one of the following options in each statement: 1 = Strongly Disagree (SD); 2 = Disagree (D); 3 = Neither Agree nor Disagree (NA/ND); 4 = Agree (A); 5 = Strongly Agree (SA).

<b>Do you agree that implementing kaizen costing in eThekwini municipality will result in the following opportunities?:</b>						
	<b>Please place a tick in the appropriate column</b>	SD	D	NA/ND	A	SA
7.	Waste elimination will be improved through implementing kaizen costing	1	2	3	4	5
8.	Processes will be improved through implementing kaizen costing	1	2	3	4	5
9.	Systems will be improved through implementing kaizen costing	1	2	3	4	5
10.	Productivity will be improved through implementing kaizen costing	1	2	3	4	5
11.	Implementing kaizen costing will improve customer satisfaction	1	2	3	4	5
12.	Implementing kaizen costing will develop an organizational culture of collaborative learning at all levels of the company	1	2	3	4	5
13.	Competitiveness of this department will improved through implementing kaizen costing	1	2	3	4	5
14.	My creativity will be encouraged in this department through kaizen costing	1	2	3	4	5

<b>To implement kaizen costing successfully in eThekwini municipality, the following structures and attitudes are required. Please indicate your level of agreement with the following statements:</b>						
	<b>Please place a tick in the appropriate column</b>	SD	D	NA/ND	A	SA
15.	Employees are placed in the right positions in terms of their skills	1	2	3	4	5
16.	The role I play in my position aligns with what I like	1	2	3	4	5
17.	My co-workers have attitudes of positivity	1	2	3	4	5
18.	I take responsibility for creating an environment in which I can learn	1	2	3	4	5
19.	My ideas are valued in this department	1	2	3	4	5
20.	Employees relate to other employees positively	1	2	3	4	5
21.	Teamwork is helpful in achieving my organisational goals	1	2	3	4	5
22.	The code of ethics is followed properly in this department	1	2	3	4	5
23.	Management is prepared to empower employees	1	2	3	4	5
24.	Employees are prepared to be empowered by management	1	2	3	4	5
25.	The organisational culture in this department allows kaizen costing to be implemented	1	2	3	4	5

<b>Do you believe that implementing kaizen costing in eThekwini municipality will result in the following advantages?</b>						
	<b>Please place a tick in the appropriate column</b>	SD	D	NA/ND	A	SA
26.	Kaizen costing will encourage positive attitudes towards working as a team in this department	1	2	3	4	5
27.	Kaizen costing will enhance the value of the services provided by this department	1	2	3	4	5

28.	Kaizen costing will help this department achieve its goals	1	2	3	4	5
29.	Kaizen costing can help the organisation to solve the problems that is currently facing	1	2	3	4	5
30.	Kaizen costing will improve the efficiency in which activities are performed in this department	1	2	3	4	5
31.	Kaizen costing will improve the quality of the services provided by this department	1	2	3	4	5
32.	Kaizen costing will provide continuous improvements in process in this department	1	2	3	4	5
33.	Kaizen costing will encourage employees to initiate changes for continuous improvements in this department	1	2	3	4	5

<b>For the successful implementation of kaizen costing, employees and management need certain attributes. Please indicate your level of agreement with the following statements:</b>						
<b>Please place a tick in the appropriate column</b>		SD	D	NA/ND	A	SA
34.	Management welcomes new systems that are intended at improving organisational performance	1	2	3	4	5
35.	Management encourages employees to come up with new ideas	1	2	3	4	5
36.	Management is committed to supporting employee initiatives in all respects of continuous improvement	1	2	3	4	5
37.	Management delegates authority to employees when necessary	1	2	3	4	5
38.	Management involves employees in decision making in this department	1	2	3	4	5
39.	There are initiatives undertaken by management in this department to encourage teamwork	1	2	3	4	5
40.	Employees have the potential to engage in activities that relate to continuous improvements in this organisation	1	2	3	4	5
41.	Employees are used to the current systems of this department, however they will be able to adjust to the change to kaizen costing	1	2	3	4	5
42.	Employees are committed to learning in an attempt to get more knowledge in their field of work within this department	1	2	3	4	5

43. Do you perceive any disadvantages that may result should kaizen costing be introduced in eThekweni municipality? (Please tick only one.)

YES	NO
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If you answered Yes, please explain what these disadvantages are:

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### Section C

Overall comment:

Please indicate if there are any comments you would like to make pertaining to this research which have not been covered in the above questions.

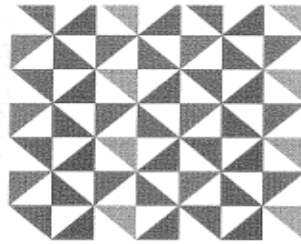
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**Thank you for your participation in this survey.**

## Appendix B: Ethics approval



Institutional Research Ethics Committee  
Faculty of Health Sciences  
Room MS 49, Mansfield School Site  
Gate 8, Ritson Campus  
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2900

Fax: 031 373 2407

Email: [levishad@dut.ac.za](mailto:levishad@dut.ac.za)

[http://www.dut.ac.za/research/institutional\\_research\\_ethics](http://www.dut.ac.za/research/institutional_research_ethics)

[www.dut.ac.za](http://www.dut.ac.za)

23 November 2016

IREC Reference Number: **REC 3/16**

Mr S P Khuzwayo  
477 Smith Street  
City Life 2055  
Durban  
4001

Dear Mr Khuzwayo

**Implementation of kaizen costing towards improving cost management at the Water and electricity Department of the eThekweni Municipality, KwaZulu-Natal**

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool for review.

We are pleased to inform you that the questionnaire has been approved. Kindly ensure that participants used for the pilot study are not part of the main study.

Please note that **FULL APPROVAL** is granted to your research proposal. You may proceed with data collection.



Yours Sincerely,



Professor J K Adam  
Chairperson: IREC



## Appendix C: Gatekeeper's permission letter – Electricity Department

 <p><b>ETHEKWINI MUNICIPALITY</b></p>	<b>PROCUREMENT &amp; INFRASTRUCTURE Electricity Unit</b>
Our Ref: 8/2/1/6/2/JN/zh – Doc. No. 9035 Enquiries to: J Narainsamy telephone 031-3119351	1 Jelf Taylor Crescent Durban, 4001 P O Box 147, Durban, 4000 Tel: 031 311 1111, Fax: 031 311 9010 www.durban.gov.za
<b>TO WHOM IT MAY CONCERN</b>	
Permission to conduct a survey about Kaizen Costing Implementation at Electricity Department in Durban Electricity has been granted to Siyanda Percy Khuzwayo.	
Yours faithfully	
	
/ <b>K G MOULDER</b> <b><u>DEPUTY HEAD : FINANCE &amp; IT SERVICES</u></b>	



## Appendix D: Gatekeeper's permission letter – Water and Sanitation Department



### WATER & SANITATION UNIT

3 Prior road, Durban, 4001  
P O Box 1038, Durban, 4000  
Tel: 031 302 4911, Fax: 031 302 4699  
[www.durban.gov.za](http://www.durban.gov.za)

2017-01-17

Enquiries: Ednick Msweli

#### TO WHOM IT MAY CONCERN

Please be advised that permission to conduct a survey about Kaizen Costing Implementation at Water and Sanitation Unit has been granted to Siyanda Percy Khuzwayo.

Yours Faithfully



17/01/2017

E Msweli  
HEAD: WATER AND SANITATION

## Appendix E: IREC letter of information and consent



### LETTER OF INFORMATION

#### Dear participant

You are kindly invited to participate in the about implementation of kaizen costing in the electricity and Water and Sanitation Departments of the eThekweni municipality. The contents of this study are detailed in the following sections.

#### Title of the Research Study:

Implementation of kaizen costing towards improving cost management at the Water and electricity Department of the eThekweni Municipality, KwaZulu-Natal

#### Principal Investigator/s/researcher:

Siyanda Percy Khuzwayo, BTech: Cost and Management Accounting

#### Co-Investigator/s/supervisor/s:

Lesley Stainbank, Academic Qualifications: B.Com. (University of Natal); CTA (University of Natal); B.Com. (Hons) (University of Natal); B.A. (University of Natal); M.Com. (University of Natal) & D. Com. (University of South Africa) Professional Qualifications: Chartered Accountant (South Africa)

#### Brief Introduction and Purpose of the Study:

This study investigates the implementation of kaizen costing in eThekweni municipality. Kaizen is a Japanese term which refers to continuous improvements. Kaizen costing refers to continuous improvements in cost management of an organisation. The purpose of kaizen costing is to continuously make small improvements in operations of the organisation that will result in cost reductions. The main objectives of kaizen costing are: improve performance and competitiveness of the organisation; improve quality of the organisation's products and services; and value addition while eliminating waste at the same time. Hence the purpose of this study is to determine if the implementation of kaizen costing will improve cost management at the water and electricity departments of the eThekweni municipality.

**Outline of the Procedures:**

Participants will be required to complete a questionnaire that will take at most 20 minutes to complete. All staff in the Water and Sanitation Department and Electricity Department will be required to voluntarily participate in this study. Participants will be given a maximum of two weeks to complete the questionnaire. It is up to the participant when and where they fill the questionnaire.

**Risks or Discomforts to the Participant:**

Neither risks nor discomforts to the participants are expected from participating in this study.

**Benefits:**

- Presentation of a paper at conferences and publication of a journal article.
- The results of this study will provide management at the eThekweni municipality management insight on how continuous improvements can be implemented

**Reason/s why the Participant May Be Withdrawn from the Study:**

There will be no adverse consequences for the participant should they choose to withdraw.

**Remuneration:**

There will be no monetary or any other types of remuneration that will be received by the participants.

**Costs of the Study:**

The participants will not be expected to cover any costs towards the study.

**Confidentiality:**

Neither dissertation nor any report will mention any names of the staff to maintain confidentiality.

**Research-related Injury:**

No injuries will be suffered by the participants through participation in this study.

**Persons to Contact in the Event of Any Problems or Queries:**

Please contact the researcher (071 893 7577), my supervisor (031 373 5740) or the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or [dvctip@dut.ac.za](mailto:dvctip@dut.ac.za).

**General:**

Participation is voluntary and the approximate number of participants to be included is 154.



**CONSENT**

**Statement of Agreement to Participate in the Research Study:**

- I hereby confirm that I have been informed by the researcher, \_\_\_\_\_ (name of researcher), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: \_\_\_\_\_,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

<b>Full Name of Participant Right Thumbprint</b>	<b>Date</b>	<b>Time</b>	<b>Signature /</b>

I, \_\_\_\_\_ (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

<b>Full Name of Researcher</b>	<b>Date</b>	<b>Signature</b>

<b>Full Name of Witness (If applicable)</b>	<b>Date</b>	<b>Signature</b>

<b>Full Name of Legal Guardian (If applicable)</b>	<b>Date</b>	<b>Signature</b>

**Please note the following:**

Research details must be provided in a clear, simple and culturally appropriate manner and prospective participants should be helped to arrive at an informed decision by use of appropriate language (grade 10 level - use Flesch Reading Ease Scores on Microsoft Word), selecting of a non-threatening environment for interaction and the availability of peer counseling (Department of Health, 2004)

If the potential participant is unable to read/illiterate, then a right thumb print is required and an impartial witness, who is literate and knows the participant e.g. parent, sibling, friend, pastor, etc. should verify in writing, duly signed that informed verbal consent was obtained (Department of Health, 2004).

If anyone makes a mistake completing this document e.g. wrong date or spelling mistake a new document has to be completed. The incomplete original document has to be kept in the participant file and not thrown away and copies thereof must be issued to the participant.

**References:**

Department of Health: 2004. *Ethics in Health Research: Principles, Structures and Processes*  
<http://www.doh.gov.za/docs/factsheets/guidelines/ethnics/>

Department of Health. 2006. *South African Good Clinical Practice Guidelines*. 2nd Ed.  
Available at: [http://www.nhrec.org.za/?page\\_id=14](http://www.nhrec.org.za/?page_id=14)