

**DECISION MAKING IMPROVEMENT BY  
EFFECTIVELY UTILISING ACTIVITY-BASED  
COSTING AND ACTIVITY-BASED MANAGEMENT  
TOOLS**

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## ABSTRACT

The aim of this study was to suggest ways to effectively utilise Activity-Based Costing and Activity-Based Management within Eskom Transmission Southern Grid to improve decision making towards improved business and financial performance. The ultimate purpose was to assist managers and staff to implement ABC and ABM effectively for improved business and financial performance.

The focus was on the following objective:

To suggest ways to effectively utilise ABC & ABM within Eskom Transmission Southern Grid as to improve decision making and business financial performance.



Given the selection of management tools available, instruments such as ABC and ABM are usually not implemented alone, but may be supported by one or more approaches. For this reason ABC and ABM are contrasted with several other popular instruments mentioned in the literature. The instruments are:

- The value chain;
- Continuous improvement;
- The theory of constraints; and
- Total quality management.

Insight will be given to provide managers with more accurate information regarding maintenance for the Grid and tools in identifying critical bottlenecks. By applying the TOC, TQM and continuous improvement strategies, managers will be able to make improved decisions, leading to improved financial performance in the Eskom Transmission Southern Grid.

The literature study revealed that ABC and ABM prove to be the cornerstone for informed decision making. Since organisations are highly dependent on quality information to make these informed decisions, ABC and ABM reorientate the organisation towards understanding and managing work processes thus impacting financial performance positively. ABC and ABM trace the cost of activities such as engineering and procurement to how maintenance benefits from these activities.

The empirical study consisted of a structured questionnaire distributed to a sample population of engineers and managers in Eskom Transmission Southern Grid in Port Elizabeth. It was aimed at gathering information about the use of ABC and ABM within the Grid. Semi-structured interviews were also conducted with financial staff in the Grid and a focus group interview with engineering staff was done. The main findings of the empirical investigation revealed that management and staff lack insight into the use of ABC and ABM and how it can be integrated with existing improvement systems within the organisation.

This study is concluded with a number of recommendations. These recommendations address the shortcomings and improvements that can be made to improve the utilisation of ABC and ABM within the organisation. The recommendations address the following:

- Ensuring full commitment towards organisational goals and broadening the endorsement of ABC within the organisation;
- Highlighting the importance of financial performance throughout the Grid;
- Training of Managers, finance staff and engineers is required for proper execution of the ABC system;

- Implementers need skills and know-how of the ABC and ABM system ensuring full utilisation;
- The main cost drivers are identified, prioritised and efforts channelled into these activities;
- Tools such as the Theory Of Constraints and Total Quality Management from the proposed model would assist the Grid in identifying the bottlenecks of a system correctly, thus know explicitly the amount of slack capacity of each activity available during a specific time period.



## ABSTRAK

Die doel van hierdie studie was om metodes voor te stel hoe om Aktiwiteitsgebaseerde Kosteberekening (ABC) en Aktiwiteitsgebaseerde Bestuur (ABM) doeltreffend binne die Eskom Transmissie Suidelike Raamwerk aan te wend ter wille van verbeterde sake- en finansiële prestasie. Die einddoel was om om bestuurders en personeel te help om ABC en ABM doeltreffend te implementeer, met verbeterde sake- en finansiële prestasie as oogmerk.

In die ontwikkeling van sodanige model was die fokus op die volgende doelwit:

Om metodes voor te stel hoe om ABC en ABM doeltreffend binne die Eskom Transmissie Suidelike Raamwerk aan te wend ten einde besluitneming en sake-finansiële prestasie te verbeter.

Gegewe die keuse van bestuurswerktuie wat beskikbaar is, word instrumente soos ABC en ABM gewoonlik nie alleen geïmplementeer nie, maar kan dit deur een of meer benaderings ondersteun word. Om hierdie rede word ABC en ABM in die literatuur met verskeie ander, soortgelyke gewilde instrumente gekontrasteer. Die instrumente is:

- Die waardeketting
- Voortdurende verbetering
- Die teorie van beperkings en
- Algehele gehaltebestuur

Insig sal verleen word om bestuurders voorsien van meer akkurate inligting betreffende die instandhouding van die Raamwerk en werktuie om kritieke opeenhopings (bottelnekke) te identifiseer. Deur die Teorie van Beperkings (TOC), Totale Gehaltebestuur (TQM) en deurlopende verbeteringstrategieë toe

te pas, sal bestuurders in staat wees om beter besluite te neem, wat sal lei tot verhoogde finansiële prestasie in die Eskom Transmissie Suidelike Raamwerk.

Die literatuurstudie het aangetoon dat ABC en ABM die hoekstene vir ingeligte besluitneming blyk te wees. Aangesien organisasies baie afhanklik is van betroubare inligting om hierdie ingeligte besluite te neem, reoriënteer ABC en ABM die organisasie ten opsigte van begrip en bestuurswerkprosesse, wat gevolglik 'n positiewe impak op finansiële prestasie het. ABC en ABM seur die koste van aktiwiteite soos ingenieurswerke en aankope na om aan te toon hoe instandhouding baat vind by hierdie aktiwiteite.

Die empiriese studie het bestaan uit 'n gestruktureerde vraelys wat onder 'n steekproefgroep ingenieurs en bestuurders in die Eskom Transmissie Suidelike Raamwerk in Port Elizabeth versprei is. Dit was daarop gemik om inligting omtrent die gebruik van ABC en ABM binne die Raamwerk te versamel. Semi-gestruktureerde onderhoude is voorts gevoer met finansiële personeel binne die Raamwerk en 'n fokusgroeponderhoud met ingenieurspersoneel is gereël. Die vernaamste bevindings van die empiriese ondersoek het aangetoon dat bestuur en personeel 'n gebrek aan insig in die gebruik van ABC en ABM toon, asook hoe dit met bestaande verbeteringsplanne binne die organisasie geïntegreer kan word.

Hierdie studie word afgesluit met 'n aantal aanbevelings. Hierdie aanbevelings het die tekortkominge en verbeterings aangespreek wat gemaak kan word om die toepassing van ABC en ABM binne die organisasie te verbeter. Die aanbevelings spreek die volgende aan:

- Dit verseker algehele verbondenheid tot organisatoriese doelwitte en die goedkeuring van ABC binne die organisasie.

- Beklemtoon die belangrikheid van finansiële prestasie dwarsdeur die Raamwerk.
- Opleiding (van bestuurders, finansiële personeel en ingenieurs) word benodig vir die doeltreffende toepassing van die ABC-stelsel.
- Implementeerders benodig kennis en vaardighede rakende die ACB en ABM-stelsels ten einde dit ten volle te gebruik.
- Die vernaamste kostekomponente word geïdentifiseer en in volgorde van prioriteit geplaas, en pogings word in hierdie aktiwiteite gekanaliseer.
- Werktuie soos TOC en TQM van die voorgestelde model sal die Raamwerk help om die bottelnekke van 'n stelsel korrek te identifiseer, en dus gevolglik presies te weet hoeveel onderbenutte kapasiteit elke aktiwiteit gedurende enige spesifieke tyd beskikbaar het.



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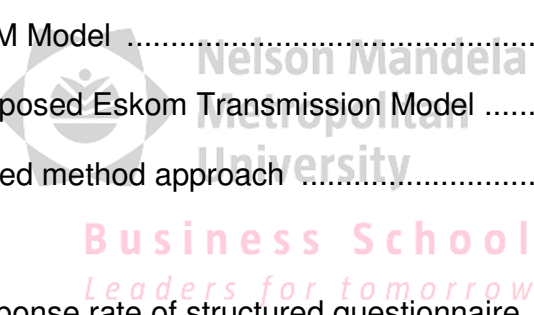
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# CHAPTER 1

## ORIENTATION OF THE STUDY

### 1.1 INTRODUCTION

Every business challenge presents winners and losers. Companies that succeed are those that are able to alter their focus and help improve opportunities. The contribution of the finance and accounting function within any organisation is to flex, change and meet their firm's needs (Schiff and Schiff, 2008: 48).

Market conditions characterised by increasingly aggressive competition and ever more demanding customers pose serious questions about competitive strategies and underline the importance of a reliable and efficient management information system for effective pursuit of those strategies. The range and scope of information required to optimise corporate performance in these conditions continues to broaden, addressing diverse areas such as markets, competitors, customers, product / service innovation, possible strategic alliances, etc. Not only the need for externally oriented information expands; the demand for accurate, reliable and versatile information on internal processes, and specifically costs, also increases in these circumstances. The quality of management decisions has been directly linked to the quality of costing information and issues relating to costing system effectiveness therefore become important, such as how that success is measured and what drives it (Pierce, 2006: 46).

Cost information should reveal problems to tackle and opportunities to exploit. It allows one to identify problems and plot safe courses to solutions and opportunities. It does this by providing cost and non-financial information about activities and cost objects (Turney, 1991: 51). Activity-Based Costing and



Activity-Based Management empowers people with information and tools to provide improved business performance (Turney, 1991: 3).

Activity-Based Costing and Activity-Based Management places an organisation in a more favourable position to achieve its objectives and goals and, if correctly applied, it should lead to improved outputs, higher quality, improved cycle time, improved service and profitability (Wiersema, 1995: 39). ABC proves to be an accepted costing tool within ESKOM Transmission.

For Eskom's vision to become a reality, its leadership relies on management and staff to use cost information to address problem areas, turning those areas into opportunities and execute strategic objectives.

The study highlights how well cost information can be obtained through the effective use of ABC and ABM as tools. The results of the study would help the leadership of Eskom Transmission Southern Grid to practice sound business strategy pertaining to continuous improvement with the aid of ABC and ABM that will encourage informed decision making and effective business performance.

## **1.2. STATEMENT OF THE PROBLEM**

Activity-Based Costing (ABC) provides the performance breakthrough for modern business. ABC reveals the problems you need to correct and the profitable opportunities that are available. Its ability to measure true business performance ensures that you improve where it counts the most – the bottom line (Turney, 1991: 2).

Gupta and Baxendale (2008: 1) further emphasize the need for ABC by highlighting the importance of cost accounting measurements and information

assisting management assess the profitability, effectiveness and efficiency of sub-segments of a company such as products, processes and departments. Accurate cost information is critical for every aspect of business, from product design to performance reviews.

Maiga and Jacobs (2008: 1) argue that knowledge of the linkage between ABC and firm performance, as well as the organisational circumstances under which ABC can provide performance enhancements to companies, are essential inputs to the investment and operational decisions that companies must make before approving this important resource allocation decision. Many companies have adopted ABC, and researchers have examined important issues related to the financial impact of this organisational innovation.

It is clear that cost information is imperative to business. ABC and ABM are the business tools assisting managers make informed financial and operational decisions towards improve business performance. It is the researcher's intention to show that ABC and ABM will have a direct impact on management decisions and will offer business improvement opportunities.

Based on the preceding information, the following research questions need to be asked:

- To what extent do ABC and ABM contribute towards decision making?
- How can other continuous improvement tools assist ABC and ABM?
- What is the impact of ABC and ABM on financial performance and operational decision-making in the Southern Grid?

The research problems formulated above imply that certain specific aims have to be achieved through this present study.

### 1.3 AIM OF THE STUDY

The aim of this study was to suggest ways to effectively utilise ABC & ABM within Eskom Transmission Southern Grid to improve decision making and business financial performance. The results of the research could mould how ABC and ABM in other Transmission Grids will be configured within the company.

The overall aim was operationalised by:

- presenting an overview of the organisation – Eskom Transmission Southern Grid;
- exploring the need for a sound Transmission network towards economic growth;
- providing a background and underlining the need for ABC and ABM in modern business;
- suggesting how ABM can be utilised in Eskom Transmission that will effect improved decision making and sound business financial performance.

### 1.4 RESEARCH METHODOLOGY

According to Leedy and Ormrod (2005: 12) this refers to the researcher's general approach in carrying out the research project. The approach taken normally indicates which research strategies or tools need to be selected. Both a qualitative and quantitative research method were employed in this study.

### **1.4.1 Review of literature**

Leedy and Ormrod (2005: 64) state that a literature review describes the theoretical perspectives and previous research findings regarding the research problem. A literature study on what ABC and ABM is, its importance as a business tool and the impact they (ABC and ABM) can have on sound business decisions, will be done. In order to obtain relevant literature, a variety of electronic databases, internet websites and internet search engines were utilized, as well as accounting issued journals and text books.

### **1.4.2 Sample**

For the purpose of this study, a purposive sample will be drawn from a population of eleven middle managers, fifteen engineers and fifteen finance staff. Christensen (2001: 198) believes this technique to be valid as it provides a sample that is representative of the population.

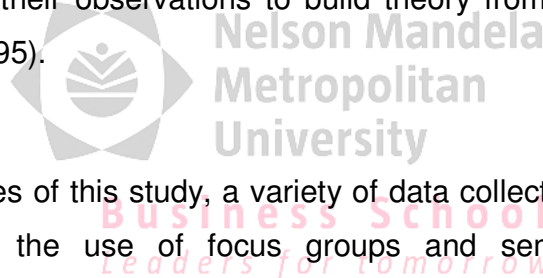
Purposive sampling was used for this study. A purposive sample of managers was selected for this study. From the sample, ten middle managers and twelve engineers were selected at Eskom Transmission Southern Grid in Port Elizabeth to complete the questionnaire. Focus groups interviews with seven engineers within Eskom Transmission Southern Grid was done.

## **1.5 RESEARCH DESIGN**

A research design is the general strategy a researcher will follow to solve the research problem, in that it provides the overall structure for the chosen procedures (Leedy & Ormrod, 2005: 85). Research, as defined by (McMillan and

Schumacher, 1993:9) is a systematic process of collecting and logically analysing information for some purpose. Research design is the specification of procedures for collecting and analysing data to help identify or react to a problem or opportunity (McMillan and Schumacher, 1993: 9).

A mixed method design was used for this study. This signifies a combined quantitative and qualitative approach to data collection and analysis. According to Leedy and Ormrod (2005:95), a quantitative researcher aims at, among other things, establishing, confirming or validating relationships. In this way such researchers hope to gain better insight into complex occurrences, events or situations. In the final analysis, their work is often exploratory in nature and they may even use their observations to build theory from the ground up (Leedy & Ormrod, 2005: 95).



For the purposes of this study, a variety of data collection methods will be used. These include the use of focus groups and semi-structured open-ended interviews for the qualitative research and a questionnaire for the quantitative research designs respectively. To gather the data for the investigation, the researcher will conduct focus group interviews with ten middle managers within ESKOM Transmission and semi-structured open-ended interviews will also be conducted with senior managers to establish how they approach ABC and ABM and probe current practices regarding decision-making and business performance within the organisation.

The mixed method approach is usually applied when a researcher tends to base knowledge on practical foundations. Both quantitative and qualitative data will therefore be collected at the same time (McMillan & Schumacher, 2006: 28).

Muijs (2004: 9) states that a mixed method approach is a flexible approach where the research design is determined by what the researcher wants to find out, rather than by any predetermined epistemological position. In mixed method research, qualitative or quantitative components can predominate, or both could have equal status.

## 1.6 OUTLINE OF THE STUDY

The study is divided into five chapters. The research is divided into an introductory chapter in which the problem is defined, the research motivated and the aims as well as method of the study provided, the chapters following, are organised as follows:



### **Chapters 2, 3 and 4: Literature Review**

Chapters 2, 3 and 4 provide the literature review for this study. The literature review section which is divided into three main chapters; and encapsulate a review on the literature on Eskom Transmission, provides the concept of costing and the literature on the importance of ABC and ABM in modern business.

Chapter 2 provides the background of ESKOM Transmission as a power utility, its divisions and the impact it has on the greater economy. Chapter 3 of the literature review focuses on costing and how it impacts any organisation, the various cost improvement tools, the relevance of improved costing in modern business and the importance of the value chain. Chapter 4 covers the core aspects of ABC and ABM, specifically highlighting the aspects such as Activity-Based Costing as a process, fundamentals of ABC; the principles of ABC as used in business, maintenance costing as an ABC approach; the integration of

ABC and TOC (Theory of constraint); effective Activity Based Management (ABM); understanding ABM and its importance and ABC within Eskom Transmission Southern Grid.

## **Chapter 5: Research Methodology**

The research methodology chapter describes the methodology employed in the investigation of the relationship between ABC and ABM and effective decision making and business performance. It identifies and briefly describes the paradigm of the research and then goes on to describe how the sample was determined; how the questionnaires were administered; the history of the measuring instruments used; their reliability and validity. This chapter also sets out the research design for the study.

## **Chapter 6: Analysis of results**

This chapter contains the results, descriptions of the results followed by the analysis of the relationship (interpretation of the results) and explanations on what the researcher subscribes to the results.

## **Chapter 7: Discussion, recommendations and conclusions**

The treatise ends with a discussion, concluding remarks and recommendations on further research in ABC and ABM in modern business pertaining to its importance in decision making and bottom-line profits.

## 1.7 CONTRIBUTION OF THE STUDY

Increased competition demands that companies improve the effectiveness of decisions concerning products and customer mix, pricing, and product design. Companies in their search for competitive strength found that they needed accurate information relating to consumption of resources used to produce, sell and deliver products and services to customers (Cooper, Kaplan, Maisel, Morrissey and Oehm, 1992: v).

Glad and Becker (1994: 219) further state that organisations need reliable cost information, which serves in many planning and decision support roles. An ABC & M system can generate this quality information and interrelate superbly with strategic planning to, inter alia, produce products of higher quality cost-effectively and achieve overall customer satisfaction.

This study provides Eskom Transmission Southern Grid with possible tools to respond to the demands brought about by change in the business environment by utilising ABC and ABM as an accounting and business improvement tool. In so doing, the managers are better equipped to meet customer expectations, improved network quality of supply and business performance through effective decision making.

The impact of this work in terms of enhancing accountants and managers relations and communication and improving the accountant's awareness of the operations has been beneficial.



## 1.8 GLOSSARY

The following key aspects of this study are defined:

**Activity-Based Costing** - ABC is defined as an information system that allows one to identify problems and plot safe courses to solutions and opportunities. The author further states that ABC assumes that activities cause cost and that cost objects create the demand for activities. ABC is a method for assigning cost and measuring performance (Turney,1991: 51).

**Activity-Based Management** - ABM is the management and control of a firm's performance using ABC information as the focus for decision-making. ABM is broken into several steps notably planning, education and awareness, process/activity definition, data collection, performance improvement techniques, planning the ongoing system, and implementation (Huang, 1999: 25).

**Activities** – Units of work performed within an organisation. A description of the work that goes on in the organisation and consumes resources (Turney,1991: 51).

**Continuous improvement** – The relentless and on-going search for ways to improve business performance (Turney,1991: 317).

**Cost drivers** - Cost drivers can be defined as those factors or transactions that are significant determinants of cost (Glad and Becker,1994: 22).

**Efficiency** – “doing things right”, maximising the input/output.

**TOC** - Huang (1999: 21) defined the theory of constraints (TOC) as a method that deals with scheduling production through a pre-existing application that maximizes profitability by maximising output.

**TQM** – away of ridding peoples lives of wasted effort by bring everyone into the processes of improvemnent, so that results are achieved in less time (Oakland, 2000: 19).

The following chapter will focus on the historical background and Eskom as a power utility.



## **CHAPTER 2**

### **LITERATURE REVIEW ESKOM**

#### **2.1 INTRODUCTION**

Power utilities in South Africa, have in recent years come under pressure. Equally, increased pressure on the maintenance and management of the services and utilities of these companies, have become national imperatives. It is evident therefore that cost and the quality of management decisions impact on the quality of electricity supply and services (Asher, 1999).

Eskom demonstrates its commitment to its vision of “together building the powerbase for sustainable growth and development” through its core business focus of electricity generation, transmission, energy trading and distribution. It entrenches the values of excellence, innovation, customer satisfaction and integrity across all business operations (Eskom, 2008).

According to Eskom (2008), achieving the Eskom vision requires in-depth planning and implementation in a complex environment characterised by economic growth, greater demand for electricity and the increased need for significant infrastructure expansion, as well as competition for scarce materials (coal and equipment), funding, skills and supplier inputs. Challenges are compounded by the rising cost of primary energy and new components, restructuring of the electricity distribution industry, the need to continually improve our environmental performance and the growing involvement of stakeholder groups (Eskom, 2008).

Competition in the global environment has greatly intensified and accurate costing becomes very important as it may lead to better decisions made by companies to survive and maintain profit margin (Wong and Rich, 2005). One of the most problematic issues in cost management is the product costing, which deals with assigning shared or indirect costs associated with production support services (e.g. procurement, maintenance, quality control) to individual products (Wong and Rich, 2000).

Therefore, it can be argued that cost is imperative in business, hence ABC proves to be a dynamic approach to determine accurate costs by assigning them to the principal activities performed within an organisation. Widely applied in various manufacturing industries, it is not entirely new in the service industry (Glad and Becker, 1994: 12).

Sale and Houston (2007: 3) support this argument by stating that ABC helps to establish a link between the services offered and the activities that are necessary to provide services and the expenditures necessary to perform the activities by establishing this link, costs can be tracked and assigned to processes and activities performed by the cooperative.

In this chapter, the researcher will provide discussion on ESKOM as a power utility in South Africa, highlight the divisions within ESKOM, explore the importance of a sound transmission network and discuss the importance of the quality of supply to the greater network.

## 2.2 ESKOM AS A POWER UTILITY IN SOUTH AFRICA

Electricity is an essential service that contributes to the prosperity and quality of life. It stands to reason that electricity supply companies should provide their customers with a wide range of services that are essential in the delivery of such vital services. In this section, the researcher will briefly explore South Africa's electricity utility namely the Electricity Supply Commission (ESKOM) and the essential services it renders.

According to Khumalo (2004: 3) ESKOM has committed itself to the electrification of South Africa and the improvement of the standard of living to support economic growth in the country and to provide sustainable growth. ESKOM (2008) reiterates that ESKOM is a vertically integrated operation that generates, transmits and distributes electricity and plays a significant role in accelerating growth in the South African economy by providing high quality of electricity supply to satisfy the needs of the country.

Founded in 1923 at headquarters in Johannesburg, ESKOM has become the largest generator and distributor of electrical power in Africa. ESKOM generates ninety five percent of the electricity used in South Africa and is responsible for the generation, transmission and distribution of electricity from its 24 power stations, with a combined nominal capacity of 40,585 megawatts over 26, 461 kilometres of transmission lines (ESKOM Distribution, 2007). It is therefore evident that, in order to support the provision of high quality electricity supply at the lowest possible cost, a well-designed, efficiently operated and maintained, reliable transmission network is required (Crisp, 2004: 21).

Sale and Houston (2007:4) posit that the services offered by ESKOM may be broadly grouped into the areas of generation, transmission and distribution.

Generation includes the building and maintenance of generation stations to produce power from any of a wide variety of fuels while transmission is the process of moving the power in high-voltage over what may be long distances and includes provision and maintenance of the lines and other necessary equipment.

The authors highlight the area of distribution as transforming the power to lower voltage and distributing it over smaller lines to the individual customer. Distribution also incorporates the installation and maintenance of power distribution lines to new and existing customers and the provision of emergency response in the event of a disruption service (Sale & Houston, 2007: 5).

Crisp (2004: 23) states that transmission networks provide an essential service to the communities served by ESKOM as these networks operate and maintain electricity supply. Electricity transmission networks connect generators of electricity with users of electricity. Domestic users of electricity are connected through distribution networks. The point of connection between a distribution network and a transmission network is often described as a bulk supply point.

For the purposes of the study, the different divisions within ESKOM will now be discussed.

### **2.3 DIVISIONS WITHIN ESKOM**

According to Sale & Houston (2007: 1) electric utility companies provide their customers with a wide range of services that are essential in delivery of the

electricity. These services are broadly grouped into the areas of generation, transmission, and distribution.

Generation includes the building and maintenance of generation stations to produce power from any of a wide variety of fuels. Transmission is the process of moving the power in high-voltage lines over what may be long distances to get it to the general area of the customer and includes provision and maintenance of the lines and other equipment necessary to the process (Sale and Houston, 2007).

Distribution includes transforming the power to lower voltage and distributing it over smaller lines to the individual customer, installing and maintaining power distribution lines to new and existing customers and providing emergency response in the event of disruption of service. Distribution services include metering, billings, and marketing. The electric utility industry is changing dramatically. Traditionally customers were compelled to purchase power from the company that provided the distribution service to the customer's location (Sale and Houston, 2007).

Financial results (2008) further state that ESKOM generates, transmits and distributes electricity to industrial, mining, commercial, agricultural and residential customers and redistributors. Additional power stations and major power lines are being built to meet rising electricity demand in South Africa.

Power stations form the very backbone of ESKOM as a power utility. ESKOM's Generation Division is the power house of the South African economy. The Division currently maintains and operates 24 power stations throughout South Africa, with an installed capacity of over 40 000MW. These include coal-fired, nuclear, hydro, pumped storage, wind turbine and gas turbine facilities. ESKOM

Holdings' core existence is based on the generation, transmission and distribution of electricity. Generation is responsible for managing the first part of this value chain, which is the production of electricity utilising a total budget of almost R38 billion. The division's mandate is to operate and maintain ESKOM's generating assets at their optimum. This is done through the efforts of approximately 10 000 employees spread evenly across the various power stations and some at the head office, Megawatt Park (Generation, 2009).

Since the early 1990's ESKOM Distribution connected over three million homes to the South African electricity distribution network. The network planning and design criteria adopted by ESKOM Distribution maximised the number of customers that could be connected with the available funding. Electricity distribution is the final stage in the delivery (before retail) of electricity to end users. A distribution system's network carries electricity from the transmission system, and delivers it to consumers. Electric distribution substations transform power from transmission voltage to the lower voltage used for local distribution to homes and businesses. The modern distribution system begin as the primary circuit leaves the sub-station and ends as the secondary service enters the customer's meter socket. A variety of methods, materials, and equipment are used among the various utility companies, but the end result is similar (Nersa, 2008).

## **2.4 THE IMPORTANCE OF A SOUND TRANSMISSION NETWORK**

ESKOM transmission networks provide an essential service to communities. The quality of that service directly impacts on work productivity and quality of life. The electricity network is therefore seen by many countries as being of strategic importance.



The distinction between transmission and distribution network is not completely clear - different jurisdictions use different voltages to define the point at which the subtransmission/distribution network joins the transmission network. However, transmission networks are often defined as operating at voltages above 100kV or above 66kV. Such networks often operate with two or more different voltage levels, the higher voltage parts of the network intended to transmit higher power flows. The design of transmission networks usually incorporates a higher degree of redundancy than is generally found in distribution networks. This is considered necessary to provide reliability of supply to customers, since transmission lines usually supply more customers per circuit than do distribution circuits (Crisp, 2004: 7).

Reliability is the first area of concern that needs to be addressed by any effective electric transmission system. Transmission reliability entails several components including adequacy (sufficient capacity) and security operational reliability (The Division of Policy Analysis & Intergovernmental Liaison, 2001: 3).

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The important aspects of any transmission business are maintenance and operations. In order to have a sound transmission network, it remains imperative to focus on these core issues. Sound decision making and relevant information pertaining to these areas remains paramount.

It is in the light of the above, Miller (1996: 1) states that the purpose of management information system is to track and provide information about horizontal aspects (namely work activities and processes) of an organisation has lagged significantly behind the needs of its managers. The author further states that ABM fills this information need by providing activity, cost and operating information that reflect the horizontal view. In addition to accurate information about cost and related activities, ABM also provides useful information about

value analysis, cost drivers and performance measures to initiate drive or support effective management decisions-making and organisational improvement (Miller, 1996:1).

This is further supported by Sale & Houston (2007: 34) explaining that ABM can be used to perform detailed economic analysis of important activities to improve strategic and operational decisions.

ABC systems thus assist managers in determining what causes costs, and how they can manage activities or processes to reduce these costs. Management uses ABC as a tool to determine more accurate costs of the various services they offer and help determine the areas in which the company can be most competitive (Sale & Houston, 2007: 34).

Khumalo (2004: 3) agrees that ESKOM has integrated sustainable development issues into decision-making for many years. Given that the sector is long term in nature and that many decisions have implications for decades, it is vital that ESKOM take robust and responsible decisions. As the new build programme progresses and decisions are taken on key operational practices and programmes, many of the critical issues are identified and factored into decisions.

## **2.5 QUALITY OF SUPPLY TO THE GREATER NETWORK**

ESKOM's sustainable development philosophy and practice form a vital and integral part of ESKOM's business which guides their vision. It ensures that the organisation strives to continually improve their performance in consultation with

its stakeholders in a transparent manner. ESKOM's performance is continually benchmarked against international practice, as they strive to go beyond what is required of them in terms of legislation (Nersa, 2008).

In order to uphold such world class standards, ESKOM continually attempts to employ standards of continuous improvement and quality management systems. Activity based costing is one of such tools for continuous improvement within business.

A research study within ESKOM by Vajeth (2001: 1) revealed that the economic impact of poor quality of supply to customers has not been adequately quantified. Accurate quantification of these costs will lead to improved investment decisions as far as mitigation measures are concerned.

This means investment decisions in the transmission network have the probability to reduce in number, duration or magnitude of voltage dips, or it may mean mitigation measures at the customer's plant or in some cases it may lead to no investment action at all. The importance of accurate quantification of cost thus proves to be vital in the decision making process.

For Sangiovanni (2004:9) a particular challenge for regulators is to achieve an appropriate balance between incentives. This implies minimising costs and network charges on the one hand, and augmentation of transmission networks on the other. Some concerns have been raised that regulators have been too focused on reducing costs, at the expense of incentives for effective operational performance and efficient maintenance and investment, leading to operational decisions with substantial efficiency losses and financial costs for consumers and market participants.

Understanding the relationship between performance and cost is a critical part of any network performance improvement strategy. Fact based decision making must be applied such that the maximum level of performance improvement can be obtained with available funding (Carter-Brown, 2008: 1).

## **2.6 CONCLUSION**

Chapter two has given insight to the founding of ESKOM as well as its importance in the economy. Chapter three will deal with an in-depth understanding of costing, the different basis of costing and a fundamental difference between ABC and traditional costing systems.



## **CHAPTER 3**

### **LITERATURE REVIEW; COSTING**

#### **3.1 INTRODUCTION**

Dealing with today's competition is a challenge enough, even when one has all the information (Turney, 1991: 2). If one is responding to the wrong information, it could be a losing battle. Incorrect cost information can create a crisis from which one may never recover. It may lead to problems that one can ill afford in today's competitive environment. Focus might be on the wrong priorities and the wrong problems might be solved (Turney, 1991: 2).

Pierce (2006: 3) states that intense competitive pressure has now become the norm for most organisations. Market conditions characterised by increasingly aggressive competition and ever more demanding customers pose serious questions about competitive strategies and underline the importance of a reliable and efficient management information system for effective pursuit of those strategies.

Schiff and Schiff (2008: 4) posit that economic recessions usually spark a renewed interest in rigorous, detailed and effective cost-management practices. Given the lack of orientation, preparation or temperament for a recessionary period, the first response and reaction of most managers typically involves a "siege mentality" that includes: protecting one's turf; battening down the hatches; slashing all general ledger expense categories; and viewing the finance's department's role as a headcount "executioner".

The quality of management decisions has been directly linked to the quality of costing information and issues relating to costing system effectiveness therefore become important, such as how that success is measured and what drives it (Pierce, 2006: 3).

The need for a sound costing model is seen as imperative in the quest for sound business operations and decision making. Costing systems thus play an integral part in business and should be prioritised. The researcher will now explore traditional costing methods, cost management and the difference between ABC and traditional costing systems.

### 3.2 COST ACCOUNTING



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As with bookkeeping and accounting, the origin of cost accounting is unknown. With the growth in the 14th century of domestic industries – work done at home by artisans for capitalist and created the need for some form of industrial accounting (Glad and Becker, 1994: 2).

There was a simpler time when a factory generally made a single product and most of the costs were directly allocated to that product. Indirect costs were limited to simple management and administrative functions and comprised a small percentage of overall costs. However, over time factories became more diversified and began producing more varied product lines. The companies became more complex and factory overheads increased in size to accommodate these changes. Ancillary functions such as Human Resources, Accounting, Compliance Staff, Facilities Management and Information systems, also became larger to deal with the increasing complexity. Pretty soon, indirect costs comprised a hefty portion of operating costs. In order to track and control these

costs, a number of methodologies, philosophies and practices have been developed over the years to allocate costs in a more meaningful way (Gubata, 2008).

Cost accounting measurements and information help management assess the profitability, effectiveness, and efficiency of sub-segments of a company such as products, processes, and departments. Accurate cost information is critical for every aspect of a business, from its product designs to its pricing policies to its performance reviews (Gupta and Baxendale, 2008: 1).

The assignment of indirect costs in a traditional costing system can lead to product-cost subsidisation. This is where excessive costs are charged to high-volume products and insufficient costs are charged to low-volume products. The result can lead to increased consumer demand for the undercosted—and underpriced—products and reduced customer demand for the overcosted—and thus overpriced—high-volume product (Barton and MacArthur, 2003: 2).

Turney (1991: 38) states that to get going in the right direction, you need a beacon, some kind of signal to guide you. For example, cost measures are signals that stimulate action. People pay attention to cost signals, because they are often used to gauge and reward performance. It is important therefore for a cost system to send the right signals. The wrong signals may misdirect improvement efforts, may encourage actions that interfere with improvement, and may even endanger the company's existence.

### 3.2.1 Traditional costing Accounting methods

Accounting systems, and particularly management accounting systems, have shown relatively little change in the last century or two. However, several important events occurred during the last decade, which are dramatically changing the face of management accounting. Researchers and practitioners of management accounting all over the world are seeking improved methods and philosophies to measure and influence the financial behaviour of organisations (Glad & Becker, 1994: 1).

In general and as might be expected, there is a strong association between the extent to which managers use information from the costing systems for various purposes and the overall level of success they ascribe to those systems (Pierce, 2006: 5).

### 3.2.2 Traditional cost vs. ABC

Conventional bases (mainly direct labour hours and material cost) were used to unitise production overhead cost. The accountants have found difficulty convincing managers of the efficacy of these rates. Indeed, the accountants themselves accepted these rates hid the key underlying causal factors which influenced some of the firm's overheads and distorted reported cost in ways which could mislead managers (Innes & Mitchell, 1991: 8).

Turney (1991: 24) reaffirms this saying that conventional cost systems are no longer in tune with external and internal conditions affecting today's business environment. External conditions have changed because of global competition,



technological advances and access to low-cost information systems.” There’s a new competitive environment out there that we must learn to thrive in.”

Advocates of ABC claimed traditional management accounting systems generated misleading costs in a contemporary business environment and implementing ABC would remedy this (Johnson and Kaplan, 1987; Jones and Dugdale, 2002) as quoted by Sharman (2003: 132). Sharman (2003: 133) further states that traditional cost accounting drove companies to emphasise low volume and complex products, because insufficient overhead was allocated to them.

According to Cooper, Kaplan, Maisel, Morrissey and Oehm (1992: 10), activity based cost systems differ from traditional systems by modeling the usage of all organisational resources on the activities performed by these resources and then linking the cost of these activities to outputs such as products, services, customers and projects.

  
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Glad and Becker (1994: 8) draw some very important conclusions in terms of the applicability of traditional accounting systems in business. Some of these are outlined below:

- Product costing based on manufacturing cost alone today represents an unacceptably low proportion of total cost. Non-manufacturing product cost, such as product selling and product distribution expenses are ignored for costing purposes. This could lead to significant cross-subsidisation of cost as the consumption of the latter cost is not known. An ABC system addresses the treatment of all overhead-related cost. Material cost will be treated as direct cost, except that all cost incurred in bringing the product to its current state and location will be incurred;

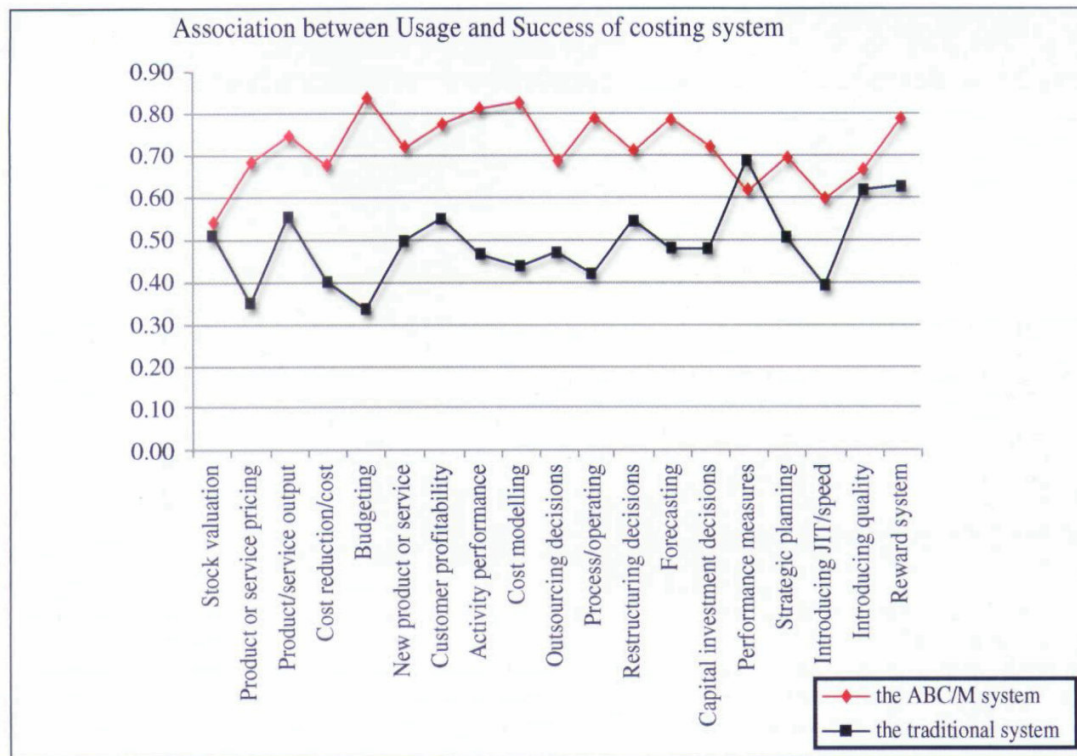
- Labour as a basis for assigning manufacturing overhead, is irrelevant as it is significantly less than overhead and many overheads do not bear any relationship to labour cost or labour hours;
- The cost of technology is not assigned to products based on usage, instead direct labour cost is being replaced by an indirect machine cost;
- Service-related costs have increased considerably in the last few decades. Costing of services such as banking services, insurance services and several internal services have expanded considerably in the past decade, thus a greater awareness is needed in order to cost products better to determine profitability:
- Cost affected or driven by time (interest and inflation) has increased significantly, yet time does not feature in traditional cost systems as a cost driver:
- Greater variety, diversity and complexity of products are not taken into consideration in traditional systems:
- A much more sophisticated market, which calls for the production of goods and rendering of services desired by the customer/client, and not those thought proper by the supplier, accentuates the lack of customer focus in traditional systems (Glad and Becker, 1994: 8).

The authors further state that one of the more important paradigm shifts in cost accounting has been the utilisation of the factor which influences cost, namely the cost driver, to determine product cost and to serve as a mechanism for managing cost (Glad and Becker, 1994: 8).

The analysis reported by Pierce (2006: 48), below in figure 3.1 was designed to examine whether there was a link between the extent to which managers use the costing information for each of a number of specified applications and the overall assessment of user satisfaction with the costing system. This analysis was conducted for both ABC and traditional systems by comparing the frequency of

usage in 19 specified areas of application with the overall satisfaction of the users with the costing system.

Figure: 3.1 Association between Usage and Success of costing system



(Source: Pierce, 2006: 48)

It can thus be denoted that the findings show that, while this is sometimes the case, levels of usage need to be interpreted with caution. Firstly, there is a major difference between the two types of systems, with the association being noticeably stronger for ABC systems than for traditional systems. This may suggest that managers in companies that use traditional systems sometimes use the information generated by these systems because they have little or no alternative, but they may nevertheless be aware of significant deficiencies in the information. There are some exceptions to this trend, most notably where the

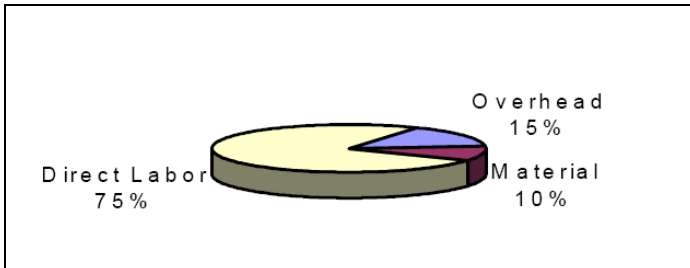
system is used to generate information for performance evaluation, where the pattern is reversed and the correlation between usage and success is actually higher for traditional systems (Pierce, 2006: 49).

Secondly, the relationship shows wide variation across the range of applications. One of the most interesting findings is in the area of budgeting, which has been heavily criticised in recent years. The fact that traditional costing systems are widely used to provide information for the purpose of budgeting is not necessarily a sign that the costing systems are perceived to be successful - managers may simply have no alternative (Pierce, 2006: 49).

Traditionally, the costs of manufacturing a product have been categorised as direct material, direct labour, and overhead. Traditional cost systems, also called volume based cost systems (VBC systems) trace overhead costs to the product based on the assumption that products cause the costs. Very few allocation bases have historically been used. The most common allocation base used in VBC is direct labour hours. The amount of overhead allocated to a batch of products increases linearly with the volume produced. So, it is assumed that as volume of output increases, direct labour hours increase in a linear fashion (Gurses, 1999: 3).

Figure 3.2 illustrates how traditional accounting systems were developed at a time when direct labour was a large percentage of the total product costs. Changes in manufacturing technologies, such as the just-in-time philosophy, robotics, and flexible manufacturing systems decreased the direct labor component of production and increased overhead costs. In today's manufacturing environment, direct labor accounts for only 10 percent of the costs, whereas material accounts for 55 percent and overhead 35 percent.

Figure.3.2. Traditional cost allocation

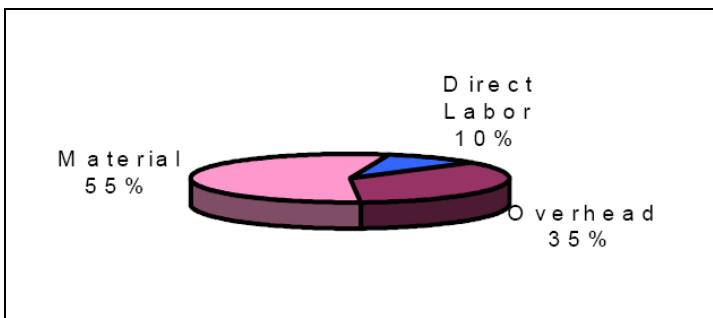


(Source: Gurses, 1999: 22)

Gurses (1999: 3) explains further that the proportion of material, direct labor and overhead costs in today's world is apportioned differently with aid of ABC as a costing tool.

An ABC system is a better way of addressing how overhead related cost should be treated. Material cost will be treated as direct cost, except that all cost incurred in bringing the product to its current state and location will be included (Glad and Becker, 1994: 8). This modern cost allocation is depicted in figure 3.3 below.

Figure.3.3. Modern cost allocation (ABC).



(Source: Gurses, 1999: 22)

The solution to the product cost distortion problem is ABC. ABC provides the information to identify the components of overhead more precisely such that product design, development, production, and distribution decisions are better grounded. ABC assigns resource costs to products more accurately, and as a result it acts as a decision support tool for companies. Decisions are not arbitrary, which is the case in traditional accounting systems, but based on facts (Gurses, 1999: 22).

### **3.3 COST MANAGEMENT IN MODERN BUSINESS**

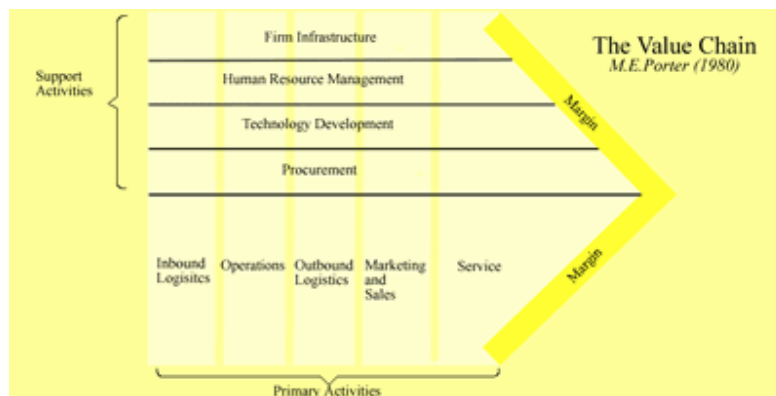
Today, many financial services companies are grappling with cost pressures, margin squeezes and sluggish topline growth. Many management teams recognise the need to get a better handle on the profitability of various business units within an organisation so that they can allocate scarce resources more effectively (Rafiq and Garg, 2002: 1). In this section, the researcher examines, explores the important aspects pertaining to cost management namely the value chain, continuous cost improvement as well as what signifies quality management in modern business.

#### **3.3.1 Value Chain**

Traditional accounting systems present summarised accounting information in the form of manufacturing and trading accounts with other expenses summarised as general and administrative expenses. This is a functional perspective of the business and does not necessarily focus on the flow of business (Glad and Becker, 1994:66).

The flow of the business is depicted by Porter's value chain as per figure 3.4.

Figure.3.4. The Value Chain



(Source: Porter, 1985)

Porter classifies the full value chain into nine interrelated primary and support activities. Primary activities can be related to actions which the organisation performs to satisfy external demands while secondary activities are performed to serve the needs of internal customers (Glad and Becker, 1994: 13). Porter depicts the value chain, comprising the above interrelated primary and secondary activities. The above value chain activities can, to a greater extent, be found in most businesses. The value chain serves as a useful mechanism to analyse an organisation in order to determine what activities it performs to convert inputs to outputs (Glad and Becker, 1994: 15).

Shank and Govindarajan (1993: 89) report that traditional cost analysis has focused on the notion of value added (selling price less cost of purchased raw materials) under the mistaken impression that this is the only area in which a firm can influence cost. Value chain – not value added – is the more meaningful way to explore competitive advantage.

Shank and Govindarajan (1993: 90) reiterate that because no two companies compete in exactly the same set of value activities, value chain analysis is a

critical step in understanding how a firm is positioned in its industry. Building sustainable competitive advantage requires knowledge of the value activities of which the competitors are part of.

The authors also regard value chain analysis as relevant and imperative for all firms and can be constructed and used by the following steps:

- Define the industry's value chain and assign cost, revenues and assets to each activity;
- Investigate the cost drivers regulating each value activity;
- Examine possibilities to build sustainable competitive advantage either through controlling cost drivers better than competitors or reconfiguring the value chain (Shank and Govindarajan.1993: 90).

Competitive advantage is affirmed as being imperative in the modern business environment. Glad and Becker (1994:12) further emphasise that for an enterprise to enjoy sustained competitive advantage it must carry out its activities in a more cost-effective way than its competitors do. It is therefore clear that such an enterprise needs to have a value chain in which:

- there are a minimum number of activities.;
- all activities are effective; and
- all activities are performed at a relatively low cost (Glad and Becker, (1994:12).

### **3.3.2 Continuous Cost Improvement**

According to Oakland (2000: 117) never-ending or continuous improvement is probably the most powerful concept to guide management. It is a term not well understood by many organisations, although that must begin to change if these



organisations are to survive. To maintain a wave of interest in quality, it is necessary to develop generations of managers who not only understand but are dedicated to the pursuit of never-ending improvement in meeting external and internal customer needs.

The ABC system, which is compatible with the continuous improvement philosophy, provides information about each process or activity (through which a product moves) as a potential area for improvement, attention, and control. Since quality can only be improved by identifying causes and reducing variations, ABC necessitates input from all levels of workers, and it breaks down the barriers between them. The ABC system has been recognised as the most powerful tool in assessing the cost of not doing things right the first time (Gupta and Baxendale, 2008: 7).



Total quality management (TQM) on the other hand has been recognised as an important tool for achieving competitive advantage in businesses (Chinho & Shofang, 2006: 469). According to Oakland (2000: 112) the gains of continuous improvement and experimentation through TQM provide the basis for successful organisational performance.

The role of management accountants has evolved from measuring and reporting business activities to participating with other disciplines in designing and implementing improvement initiatives. Recent years have witnessed an increase of programs designed to increase product quality, reduce costs, and improve firm performance. Examples include Just-in-Time (JIT), Total Quality Management (TQM), Target Costing, Benchmarking, Process Re-engineering, Theory of Constraints (TOC), Activity-based Costing/Management (ABC/ M), Balanced Scorecard (BSC), Six Sigma, and Mass Customization (Albright and Lam, 2006:1)

### 3.3.3 Quality Management

Oakland (2000: 117) states that traditional performance measures and indicators that have been derived from cost accounting information are often based on outdated arbitrary principles. These provide little motivation to support attempts to introduce Total Quality Management (TQM) and, in some cases, actually inhibit continuous improvement because they are unable to map process performance. In the organisation that is to succeed over the long term, performance must begin to be measured by the improvements seen by the customer. In the cycle of never-ending improvement, measurement plays an important role in the following aspects outlined by (Oakland, 2000: 117).

- tracking progress against organisational goals;
- Identifying opportunities for improvement;
- Comparing performance against internal standards;
- Comparing performance against external standards.

Johnson and Kaplan (1987) were perhaps among the first researchers to discuss the mismatch of traditional cost accounting measures with new manufacturing practices. Cooper and Kaplan (1992) proposed activity based costing (ABC) as an alternative to support the emerging management programs (e.g., total quality management) and especially to deal with the impact of overhead on true cost information (Gupta and Baxendale, 2008: 7).

TQM focuses on continuous improvement of the quality of products produced and eliminating the costs associated with poor quality. The philosophy behind TQM is that it is much more expensive to deal with the repercussions of poor quality (detecting, fixing, customer complaints) than to prevent their occurrence in the first place. A key measure for this practice is the Cost of Quality (COQ). This includes prevention costs (avoiding quality issues), appraisal costs (inspecting for

errors or defects), internal failure costs fixing, external failure costs (customer returns and other issues associated with defective items that were shipped) (“Strategic cost management,” 2000). Thus, TQM focuses on reducing costs by improving quality (Gubata, 2008).

It can therefore be argued that there exists real cost benefit from continuous improvement techniques of which ABC forms a major part. The researcher will now highlight the importance of improved costing in modern business with the aim of depicting the role of costing in modern business.

### **3.4 BENEFITS OF IMPROVED COSTING IN BUSINESS**

The range and scope of information required to optimise corporate performance in these conditions continues to broaden, addressing diverse areas such as markets, competitors, customers, product or service innovation, possible strategic alliances, etc. Not only the need for externally oriented information expands; the demand for accurate, reliable and versatile information on internal processes, and specifically costs, also increases in these circumstances (Pierce, 2006: 1).

The quality of management decisions has been directly linked to the quality of costing information and issues relating to costing system effectiveness therefore become important, such as how that success is measured and what drives it (Pierce, 2006: 1).

Cost-efficiency measures assess the degree to which costs per unit of output are low. According to Porter (1980: 12), this strategy of cost efficiency entails that the

firm be constantly improving its ability to produce at costs lower than the competition by emphasizing efficient-scale facilities, vigorously pursuing cost reductions along the value chain driven by experience, tight cost and overhead control, and cost minimisation (Spanos, Zaralis, and Lioukas, 2004: 1). This strategy of cost efficiency can also provide above-average returns because it allows the firm to lower prices to match those of competitors and still earn profits (Hambrick, 1983; Henderson and Henderson, 1979; Miller and Friesen, 1986; Porter, 1980, 1985). The extent that a firm succeeds in driving down costs per unit of output, thereby increasing gross margins, should result in firm profitability, ceteris paribus, increasing (Miller 1987; Porter 1980). Hence, cost improvement is expected to transfer businesses' savings directly to the bottom line (Maiga and Jacobs, 2008: 10).

Glad and Becker (1994: 80) further state that wastage does not normally feature in a conventional accounting system and cost vanishes amongst other expenses. Most quality management systems measure wastage and other non-quality factors but in a physical manner. The ABC and Activity Based Management system should help to quantify this price of non-conformance into financial terms for integration into the costing system.

According to Turney (1991: 5) unreliable cost information is an open invitation to disaster. And unintentional mispricing is only one of many possible disasters. Cost information is used in making a wide range of strategic and operational decisions. So with a flawed cost system, you are wide open for a variety of competitive problems. The author emphasises the need for an Activity based costing system as to combat these competitive problems. One cannot afford competitive mistakes in today's global economy. Companies need every possible advantage over competitors you can get. Cost systems that send the wrong signals can put a company on a crisis course from which recovery is difficult (Turney, 1991: 5).

### 3.5 CONCLUSION

Chapter three has outlined costing as a general term. It has encapsulated the very basics principles of business and the strive towards competitive advantage and ultimately profits. Costing plays a vital role in business today. Incorrect cost information can lead a company astray from which they may never recover. It may lead to problems you can ill afford in today's competitive environment. ABC systems provide improved cost information for future decisions. It is therefore imperative to explore ABC as the costing system for improved decision making, better understanding of the product and customer profitability.

Chapter four will discuss Activity Based costing and Activity Based Management in detail, fundamental concepts such as; the Theory of Constraints and specifically ABC within ESKOM Transmission.

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## CHAPTER 4

# ACTIVITY BASED COSTING AS A COST AND MANAGEMENT STRATEGY

### 4.1 INTRODUCTION

Leading institutions are implementing ABC systems that allow them to better understand resource consumption and the profitability of the products and services they offer their customers (Capps and Timlin, 1998:1). Capps and Timlin (1998:1) further state that ABC is a viable cost management concept for modern businesses.



ABC is arguably one of the most written and talked about innovations in management accounting since 1985 (Brown, Booth and Giacobbe, 2004: 44).

According to Miller (1996: 1) management information systems that track and provide information about the horizontal aspects of business have lagged significantly behind the needs of its managers (Miller, 1996: 1). ABC fills this information need by providing cost and operating information that mirrors the horizontal view (Miller, 1996: 1).

ABC's originators recommended it for economic, normative, realist and deterministic reasons – that is, it represents best value, accurately represents financial events and aids rational decision-making and contracting (Hopper & Major, 2007: 61)

Miller (1996: 1) further states that ABC makes cost and operating information useful by providing value analysis, cost drivers and performance measures to initiate, drive, or support improvement efforts and to improve decision making. This statement is further emphasised by Gupta and Galloway (2003: 131) who state that ABC can serve as a useful information system to support effective decision-making processes related to quality initiatives.

According to Cooper and Kaplan (1992: 15) ABC systems have been suggested as a management innovation that can lead to increased competitiveness and enhanced profitability by firms (Cooper and Kaplan, 1992: 15). Since costs associated with replacing a traditional costing system with ABC, including time commitments by employees and management as well as direct investments in technology and process interruptions are not insignificant, researchers and business managers are naturally interested in whether this innovation produces the positive financial results suggested (Cooper and Kaplan, 1992: 16).

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For Innes and Mitchell (1991: 1) there are arguments for and against the value of ABC in as much as its ability to enhance profitability in organisations. Furthermore, the authors note that the technique suffers criticism based upon the inability of any approach to costing to deal with the jointness of many product costs in an organisation of any complexity and the inappropriateness of historic, non-differential cost information for decision-making (Innes and Mitchell, 1991: 1).

The utility of ABC will be dependent on how well the system fits the circumstances of the organisation concerned. Innes and Mitchell (1991: 1) identify factors such as the design of the ABC system, its “fit” to the organisation structure, the cost structure of the organisation, the diversity and complexity of product, human relationships between accountants and others and the match

between the ABC system and the purpose for which it is intended, as those which can influence the level of its success in a particular situation (Innes and Mitchell, 1991: 1).

Turney (1991: 53) argues that knowing what activities cost, helps in identifying important activities - those with the greatest potential for cost reduction. Knowledge of activity cost also allows one to model the impact of cost reduction actions and to subsequently confirm that savings were achieved. Garrison, Noreen and Brewer (2006: 315) emphasise that ABC was originally used to supplement rather than replace company's existing costing system – the official costing system is used for preparing external financial reports and the ABC system used for internal decision making.

This chapter focuses primarily on the ABC application, definitions and the fundamental concepts of ABC. More specifically, the chapter deals with a basic definition on ABC and how ABC is used and applied within modern business with a view on cost reduction methods and effective decision-making.

## **4.2 ACTIVITY-BASED COSTING AS A PROCESS**

### **4.2.1 Defining Activity-Based Costing**

According to Barton and MacArthur (2003:1) ABC was originally developed by companies to deal with the problem of product cost subsidisation in the traditional costing system.

ABC is not the same as estimating or quoting, it provides information that makes estimates and quoting more precise and reliable. ABC is a cost management



method that addresses shortcomings inherent in traditional costing methods for handling the indirect cost (Needy and Bopaya, 2000: 31).

Turney (1991: 50) defines ABC as just an information system that allows one to identify problems and plot safe courses to solutions and opportunities. The author further states that ABC assumes that activities cause cost and that cost objects create the demand for activities. ABC is a method for assigning cost and measuring performance (Turney, 1991: 51).

According to Baxendale and Spurlock (1997: 4) ABC assigns costs to products by tracing overhead costs to "activities" (i.e., machining, production labour, quality control, order processing, etc.). Each product is charged based on the extent to which it used an activity. The result is a more accurate product cost, helping management decide which products to promote and which to de-emphasise. Some public utility customer segments, for example, demand more of the activities than do other segments. These characteristics are not accurately reflected in a customer segment costing approach that uses only kilowatt-hours or labour costs as the basis for allocating these shared costs (Baxendale & Spurlock, 1997: 4).

ABC involves identifying activities associated with specific cost objects (e.g. a product). An activity could be, for example, a purchasing function for reordering parts. The resources (time or labour, paper, phone, etc.) associated with this activity are assigned a cost, and that cost is associated to the cost object (the consumer of the activity) when it needs that activity performed. A cost driver (what triggers the activity to be executed) is identified that links the activity with the cost object to determine when an allocation is required (Gubata, 2008: 3).

It must be kept in mind that there are two basic cost accumulation methods namely: job order costing and process costing. Garrison, Noreen and Brewer (2006: 88) describe job order costing as a system used in situations where different products are produced each period. Process costing being explained as a situation where the company produces many units of a single product for long periods. ABC is not a cost accumulation method, therefore it does not replace these methods, but instead ABC is used to enhance the accuracy of the product costs determined in both job cost and process cost environments (Martin, 2007: 5).

Another unique feature of ABC is that the focus of this approach is on activities and the cost of those activities, rather than on products as in the traditional costing systems. It is this feature of ABC that gives management the necessary information to identify opportunities for process improvements and cost reductions (Gurses, 1999: 9).

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For the purposes of this study, the definition postulated by Glad and Becker (1994: 26) will be used. The author defines ABC as a methodology that measures the cost and performance of activities, resources and cost objects. Resources are assigned to activities, then activities are assigned to cost objects based on the use or consumption of the relevant activities. ABC recognises the casual relationship of cost drivers to activities (Glad and Becker, 1994: 26).

#### **4.2.2 Fundamentals of ABC**

The underlying assumption of ABC is quite different from that of conventional costing. Conventional costing assumes that products cause cost. ABC is more realistic. ABC assumes that activities cause cost and that cost objects create the demand for activities (Turney, 1991: 51).

According to Garrison, Noreen and Brewer (2006: 315) only manufacturing costs are assigned to products. Selling and administrative expenses are treated as period expenses and not assigned to products. In ABC, products are assigned all the overhead cost - non-manufacturing as well as manufacturing. In essence the entire cost of the product needs to be determined.

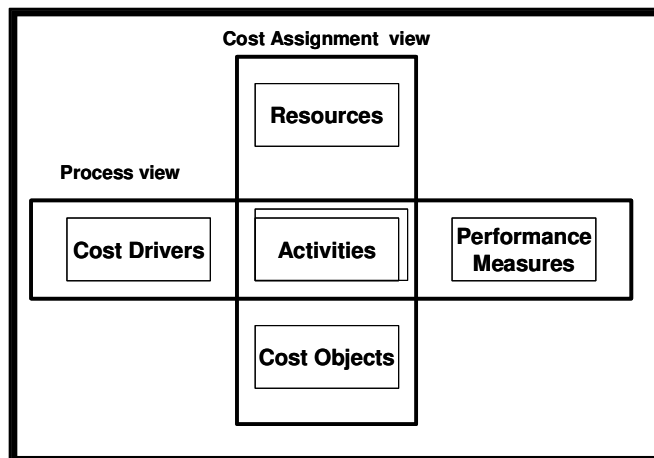
The authors further state that ABC attempts to reflect the diverse factors more accurately when costing products. It attempts to accomplish this goal by identifying the major activities that consume overhead resources and thus cause cost. An activity is any event that causes the consumption of overhead resources. The costs of carrying out activities are assigned to the products that cause the activities (Garrison, Noreen and Brewer, 2006: 315).

Glad and Becker (1994: 18) denote that the operations within an organisation are executed by means of actions. Therefore, because of the great number of actions that are normally performed, these actions are aggregated into homogenous activities. Glad and Becker (1994: 18) define activities as:

- A physical perspective, i.e. those actions that could physically be seen to be a homogenous group of tasks such as assembly;
- A logical perspective such as the quality perspective where all quality related tasks are viewed as the definition of the activity and
- A cost perspective such as storage of inventories which can be viewed from the cost driver perspective (Glad and Becker, 1994: 18).

In view of this, it becomes necessary to explore a model for ABC outlined by Turney, 1991:81), containing two views which are regarded as important in modern business.

Figure 4.1 The ABC model



(Source:Turney, 1991: 81)

According to Turney (1991: 81) the above model has two views. The vertical, is termed the cost assignment view. This reflects the need for organisations to assign cost to activities and cost objects in order to analyse critical decisions.

These decisions include pricing, product mix, sourcing, product design decisions, and setting priorities for improvement efforts. The second part of the ABC model is the process view (horizontal view). The process view reflects the need of organisations for a new category of information. This is information about events that influence the performance of activities and activity performance – that is, what causes work and how well it is done. Turney (1991: 81) states that organisations can use this type of information to help improve performance and the value received by customers.

Turney (1991: 96) explains this model further as building blocks and their general relationships and the resources depict the economic elements directed to the performance of activities. They are the sources of cost. Resources flow to activities, which are processes or procedures that cause work. The cost objective

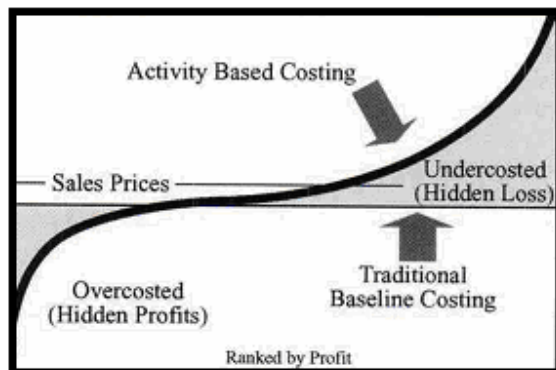
is the final point to which cost is traced. A cost objective is the reason why work is performed in the company. It may be a product or a customer.

The vertical flow of information in ABC defines the economics of the company and the organisation of work within it. It also provides the basic building blocks for creating accurate and useful cost information about strategy and operations of the company.

According to Miller (1996: 9) a cost driver is any factor that causes a change in the cost of an activity. A cost driver is any factor that causes a change in the total cost of an activity. It is, in short, the cause of cost and there are many of them.

In addition to cost information for business and activities, the ABM system must report information and data on activity performance. Knowing the total cost of an activity is insufficient to measure activity performance. Activity measures of quality, cycle time, productivity, and customer service may also be required to judge activity performance. Performance measures are defined as indicators of work performed and the results achieved in an activity, process, or organisational unit. ABC systems focus on measuring the performance of activities and processes by assessing quality, cycle time, productivity, and customer satisfaction elements of activity performance (Miller, 1996: 8).

Figure 4.2 S – Curve: ABC vs Traditional costing



(Source: Rafiq and Garg 2002: 7)

Rafiq and Garg (2002: 7) explains the S-curve as the customer segmentation analysis in allowing business to rank each service or product by profitability to determine which product segment is the most attractive. In this analysis (Figure 4.2) products are ranked according to how ABC costing compares with traditional costing. When products are overcosted (products on the left side of the diagram), ABC reveals hidden profits. Conversely, when ABC costing is above traditional costing, hidden losses are revealed (Rafiq and Garg, 2002: 7).

Miller (1996: 8) notes that the ABC outputs as described – the cost of activities, business processes, the cost of non-value - added activities, measures of activity performance, accurate product/service cost and cost drivers – all contribute to management improvement initiatives and improved decision making by providing cost and operating information about the activities of the organisation (Miller, 1996: 8).

In the next section, the principles underlying ABC as used in business will be discussed.

### 4.2.3 Principles of ABC as used in business

The ABC approach provides the potential for more accurate product costs for management decisions concerning product planning, product design and introduction, product design changes, product pricing, make versus buy, product distribution, product service and product discontinuance. ABC also provides potential benefits to many service oriented industries such as banking, insurance, health care, and transportation (Rafiq and Garg, 2002: 3).

As stipulated by Turney (1999: 68), conventional systems fail to report useful information to the aspiring world-class company. Thus, in any business be-it service or manufacturing industries, the following matters:

- The customer: ABC reports information about what matters to the customer – how well each activity contributes to the needs of the customer;
- Customer and product profitability: ABC reports accurate customer and product cost. It does so by using more and more types of activity drivers to assign cost to customers and products;
- Insight on how to improve: ABC supplies cost and non-financial information about the company's activities. This information directs improvement efforts and provides feedback on what the improvement has accomplished (Turney, 1999: 68).

Even the best run companies have problems and opportunities. Competition is rife and tools are needed in business to stay ahead. The researcher will now deal with maintenance costing as an ABC approach.

#### 4.2.4 Maintenance costing as an ABC approach

An ABC methodology is basically comprised of resources, activities and cost objects with resource drivers linking resources and activities and activity drivers linking activities and cost objects. In the maintenance context, resources may include maintenance and support crew, spare parts, maintenance tools and materials and maintenance floor space. Major activities may include preventive maintenance and unplanned or corrective maintenance. The main objective of applying ABC approach in maintenance is to obtain accurate information on how the shared indirect maintenance cost is assigned to each of the production machines (Gubata, 2008: 3).

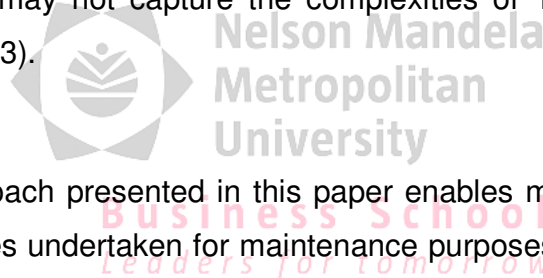
Wong and Rich (1997: 3) state that only organisations that seriously consider good maintenance management practices realise the full benefits from doing so. Furthermore the authors underline the importance of maintenance costing by showing how accurate maintenance costing is important in the context of maintenance management itself and other business analysis including the total cost of ownership analysis and product costing. Gubata (2008: 3) supports this sentiment stating that accurate maintenance costing will also provide a clear metric for maintenance improvement and a means of demonstrating how maintenance improvement activity contributes to the competitiveness of the firm.

Wong and Rich (1997: 3) further emphasise that ABC offers significant benefits over more traditional forms of overhead and maintenance cost allocation namely the general averaging of maintenance cost over all the assets employed or through arbitrary depreciation methods. The first benefit lies in the identification of activities consuming an organisation's resources and through awareness of these activities, the potential to improve these business processes. The second benefit lies in the estimation of the cost of the activities by measuring the cost of



resources consumed to perform different activities. By doing this, management is able to evaluate the efficiency of the business processes.

As maintenance is one of the activities in the value chain of the firm that relates to the purchasing policy, accurate information on maintenance cost will contribute to making a better purchasing decision. For manufacturing environments operating different types of machines, making an accurate estimation on the maintenance cost allocated to each machine is not trivial. The traditional cost allocation methods use allocation bases to distribute maintenance costs among machines, such as a uniform based allocation or price of the machine. Unfortunately, these allocations can overestimate the costs of 'more expensive' machines and may not capture the complexities of 'less expensive' machines (Gubata, 2008: 3).



The ABC approach presented in this paper enables managers to trace costs to specific activities undertaken for maintenance purposes. Additional benefit of the ABC approach is that it provides managers with much richer insight into why a particular machine costs more than another in the maintenance context.

Ensuring proper maintenance of assets proved imperative to smooth operation, thus by eliminating bottlenecks within systems of organisations can contribute towards sound operations. The Theory of constraints proves to be an effective tool in assisting organisations in identifying and eliminating such bottlenecks. In the next section the researcher will consider the integration of ABC and the theory of constraint.

### 4.3 THE THEORY OF CONSTRAINT (TOC)

ABC, together with the TOC approach, can help to identify the bottlenecks, and therefore, increase the throughput. The activities that have the smallest unused capacity amounts will, most probably, form the bottleneck activities. As a result, it can be said that ABC-based cost system provides the necessary information for TOC. The system can also be used to perform sensitivity analysis, which will show management the effects of the small changes in the activity levels, selling prices, etc. on the bottom line figures (Gurses, 1999: 15).

#### 4.3.1 Defining the TOC

According to Albright and Lam (2006: 164), Goldratt and Cox (1986) developed the TOC which is a production-flow management system. In every system there is one process, known as the constraint that has the least capacity or slowest production rate. Output for the entire system is determined by the production rate of this constraint, or bottleneck.

Huang (1999: 21) defined the theory of constraints (TOC) as a method that deals with scheduling production through a pre-existing application that maximizes profitability by maximising output.

TOC is a pull system which is based on identifying and optimising the bottleneck. TOC argues production flow for the entire facility must be planned around the constraint. TOC places safety stock in front of the constraint to minimize the possibility of unscheduled downtime. Thus, TOC results in higher constraint utilization and greater throughput levels. An additional advantage of safety stock

is that unexpected changes in stock levels are a signal of problems in the production process (Albright and Lam, 2006: 164).

The interesting thing about TOC is that it moves always from the traditional practice of focusing on costs, and instead improves the ability of the company to optimise its moneymaking capabilities. In the course of this, relevant cost reduction naturally takes place. The strength of TOC is in its simplicity (in concept, if not in implementation) and the focus it creates within an organisation to streamline its value chain processes. Unlike ABC, which focuses on allocating overhead costs to identify inefficiencies, TOC lumps all overhead costs into one bucket and doesn't worry about allocation at all (Gubata, 2007: 5).



#### **4.3.2 Integrating ABC and TOC**

ABC together with the theory of constraints philosophy TOC and mathematical programming, can provide management with more accurate information about the optimal product mix of a company and can help to identify the right bottlenecks that should be focused on to improve the system (Holmen, 1995: 23).

Holmen (1995: 23) posits that claims that ABC is superior to the TOC are unfounded since the two management accounting tools cannot be compared because they are based on different sets of assumptions. At first glance, the two concepts appear to be at odds with one another. For instance, proponents of TOC disagree with the claims of ABC advocates that problems in decision making are caused of distortions in product costs. Such disagreements are understandable considering that the assumptions of the two cost paradigms have different time horizons. ABC has a long-run time horizon; therefore it assumes that production capacity is permanent. On the other hand, TOC has a short-time

horizon, meaning that it assumes that costs will increasingly become variable. ABC and TOC can be used side by side. The key is for management accountants, is to determine which one works well for what set of circumstances (Holmen, 1995: 23).

Holmen (1995: 24) further argues that ABC and TOC are based on different time horizons. They have different assumptions about labour and overhead costs and production capacity. These assumptions are valid depending on the time horizon. In the short-run, labour and overhead costs and capacity can be considered fixed. Under these circumstances, TOC can give the right information. However, in the long-run, all costs tend to be variable and the capacity of a plant can be either increased or decreased depending on the level of demand. Since the assumptions of ABC are long-term oriented, it can reflect the expected costs of a company correctly in this time frame. Since ABC and TOC are valid in different time horizons, they can complement each other (Holmen, 1995: 24).

Gupta and Baxendale (2008: 12) state that ABC and TOC can be considered complementary rather than conflicting or contradictory. The authors further states that both of these approaches only provide information. Informed management action using that information is necessary to increase the profitability of a company. It also is believed that combining ABC and TOC approaches would permit companies to answer traditional cost-volume-profit questions, facilitate the evaluation of profitable product lines, and estimate the bottom-line figures more accurately (Gupta, 2007: 12).

Huang (1999: 21) discusses three kinds of integration situations to combine ABC and TOC principles:

- *Short-term decision back (TOC) and long-term decision foundation (ABC).* The TOC is considered a useful short-term tool because costs are fixed; meaning improving profitability is only accomplished by increasing

throughput. Thus, performance is measured by effectiveness as opposed to efficiency, which is the traditional focus of standard costing. Short-run decisions require management to accurately measure the effects produced by alternative changes in inputs. While ABC is used primarily as a technique to improve long-run decisions by improving product selection and mix, facility size, and location in which all costs are considered variable. The economic concept of short-run versus long-run depends on the expansion or contraction of capacity within a production facility. The TOC and ABC is best applied in their respective ranges (short-run & long-run) and not suited to the middle range of decision types that involve a mix of fixed and variable elements. Huang (1999: 21) comments that a possible solution to middle range decisions is to use direct costing for continuous product costing and for financial reporting along with ABC. This then does not violate ABC's proportionality assumptions (Huang, 1999: 21).

- *Mixed-Integer Programming Model.* According to Huang (1999: 21) this optimizes an objective function subject to constraints with continuous and integer variables. An objective function is used to describe an organizational goal while a second set of equations are used to model constraints that limit of the objective. Once formulated, an algorithm is used to solve the resulting set of equations. An algorithm provides variables that maximize objective functions, maximize slack variables that measure excess resources of non-constrained activities, and maximize the value of the objective function (Huang, 1999: 21).
- *TOC and ABC and Cycle-Time Management.* Managing cycle times blend ABC and the TOC. Once cycle times are broken into short intervals they become manageable for processes associated with products, customer orders, or batch goods. Managing cycle times by the TOC and ABC can be done through various processes. One such process is to increase productivity

and then perform cost-benefit analysis. The TOC helps to increase productivity by reducing cycle time without adding capacity and enables timely delivery, increasing throughput in firms that have internal manufacturing, and lowering average fixed costs per unit in the short-run (Huang, 1999: 21).

In conclusion, Huang (1999: 21) makes a point that by taking advantage of integrating the TOC and ABC a firm will attain quality decision-making.

ABC and TOC can be used side by side. The key is, for management accountants to determine which one works well for what set of circumstances. TOC as a tool for effective ABC will now be discussed in the quest towards sound decision making.

#### **4.3.3 TOC as a tool for effective ABC**

Gubata (2008: 3) posits that the interesting thing about TOC is that it moves always from the traditional practice of focusing on costs, and instead improves the ability of the company to optimise its moneymaking capabilities. In the course of this, relevant cost reduction naturally takes place. The strength of TOC is in its simplicity (in concept, if not in implementation) and the focus it creates within an organization to streamline its value chain processes (Gubata, 2008: 3).

Huang (1999: 23), describes the integration of ABC and the TOC as opposing views of the nature of product costing. Product costing from an ABC perspective assumes all costs are traceable to products and vary in proportion to certain cost drivers. From a TOC perspective, costs are fixed and sunk relative to product choices and production-level decisions. Thus, ABC cost information is inputted into the TOC for product-mix decisions (Huang, 1999: 23).

The author states further that the TOC is considered a useful short-term tool because costs are fixed and this means that improving profitability is only accomplished by increasing throughput. Thus, performance is measured by effectiveness as opposed to efficiency, which is the traditional focus of standard costing. Short-run decisions require management to accurately measure the effects produced by alternative changes in inputs (Huang, 1999: 24).

While ABC is used primarily as a technique to improve long-run decisions by improving product selection and mix, facility size, and location in which all costs are considered variable. The economic concept of short-run versus long-run depends on the expansion or contraction of capacity within a production facility. The TOC and ABC is best applied in their respective ranges (short-run & long-run) and not suited to the middle range of decision types that involve a mix of fixed and variable elements (Huang, 1999: 25).

Effective management of activities prove to be imperative as business strive to implement ABC systems effectively. The researcher will now discuss effective ABM.

#### **4.4 EFFECTIVE ACTIIVITY-BASED MANAGEMENT (ABM)**

Player and Keys (1999: 34) explain that those who look deeply into ABM will find an area of management that will empower them with solid information about their organisation that enables them to exercise leadership and wisdom in decision making.

ABM is the management and control of a firm's performance using ABC information as the focus for decision-making. ABM is broken into several steps notably planning, education and awareness, process/activity definition, data

collection, performance improvement techniques, planning the ongoing system, and implementation (Huang, 1999: 25).

Campi (1992: 5) states that ABM requires a re-education of the organisation from the top to the bottom. Activities are the common denominator in the business process analysis. The author clarifies that only universal measures for global competition today involve the time and resource consumption of activities that support business processes. ABM is thus a total cost management approach (Campi.1992: 5).

#### **4.4.1 Understanding ABM and its importance**

ABM supports excellence by providing a formal management system that compels people to understand their work and how it contributes to achieving strategic objectives" ABM changes traditional management practices to guide managers to emulate best practices and establish process controls to ensure consistently good performance (Brimson, 2008: 4).

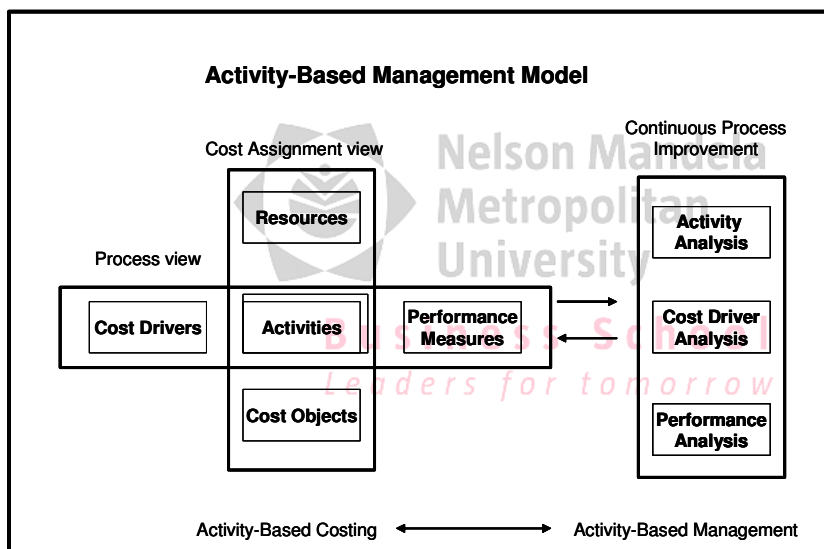
Activity Based Management supports the quest for continuous improvement by providing managers with new insights into customers of activities and business processes and by permitting managers to adopt management practices with new insights into customers of activities and business processes and by permitting managers to adopt management practices that encourage greater value added by all associates. Activity Based Management is the effective planning of the enterprises activities and the achieving of consistency in performance of activities to achieve its objectives (Brimson, 2008: 6).

Johnson (1990: 26) is of the opinion that ABM tools fail to guide companies toward competitiveness and long-term profitability, because they do not generate



process maps, have no customer focus, and do not lead to bottom-up ideas for generating continuous process improvement. The author states that activity information undoubtedly improved many companies' efforts to cut costs, but never could it have prompted actions that improve competitiveness by increasing responsiveness to customers and flexibility in processes. It simply links activity with activity drivers and focuses on reducing costs by reducing activities (Johnson, 1992: 26).

Figure 4.3 Activity-Based Management Model



(Source: Miller, 1996: 236)

According to Miller (1996: 236) the horizontal axis contains a process view which is a dynamic view similar to the Income and Expense statement that reports on what has/is happening. This part of the process is initiated by a casual occurrence termed the cost driver. The cost assignment view is basically a "snap shot" view in the sense that the Balance Sheet on a financial statement is only a view of the business at the moment the accounts are tallied. It can thus be seen as the structure and rules by which cost assignment takes place at some specific moment (Miller, 1996: 236).

Figure 4.3 depicts the key relationship between ABC, and the management analysis tools that are needed to bring full realisation of the benefits of ABC to the organisation. ABC is a methodology that can yield significant information about cost drivers, activities, resources and performance measures. However, ABM is a discipline that offers the organisation the opportunity to improve the value of its products and services (Miller, 1996: 236). ABM impacts ABC through various analyses as depicted in Figure 4.3 on the continuous improvement view.

The importance of ABM when implementing an ABC system cannot be denied and should be used put to use in the drive towards continuous improvement in business. In this regard, ABM in performance systems thus needs to be explored.



#### **4.4.2 The role of ABM in performance management systems**

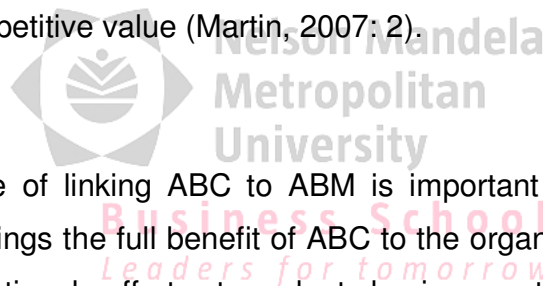
According to Gupta, Baxendale (2008: 11) the ABM system, which is compatible with the continuous improvement philosophy, provides information about each process or activity (through which a product moves) as a potential area for improvement, attention, and control. Since quality can only be improved by identifying causes and reducing variations, ABM necessitates input from all levels of workers, and it breaks down the barriers between them.

The ABM system has been recognised as the most powerful tool in assessing the cost of not doing things right the first time. The ABM system highlights this area by attaching cost to activities to quantify the quality cost through quality measurement system that are comprised of (Gupta, Baxendale, 2008: 11).

Miller (1996: 8) states that in addition to cost information for business processes and activities, the ABM system must report information and data on activity performance. Knowing the total cost of an activity is insufficient to measure

activity performance. Activity measures of quality, cycle time, productivity, and customer service may also be required to judge activity performance. Activity-based management systems focus on measuring such performance of activities. Measuring the performance of activities provides a scorecard to report how well improvement efforts are working and is an integral part of continuous improvement (Miller, 1996: 8).

ABM includes the strategic cost information provided by ABC for decisions such as product introduction, product pricing, and make versus buy, product discontinuance and investment management. But ABM also includes non-financial, process oriented information needed to measure and monitor the sources of competitive value (Martin, 2007: 2).

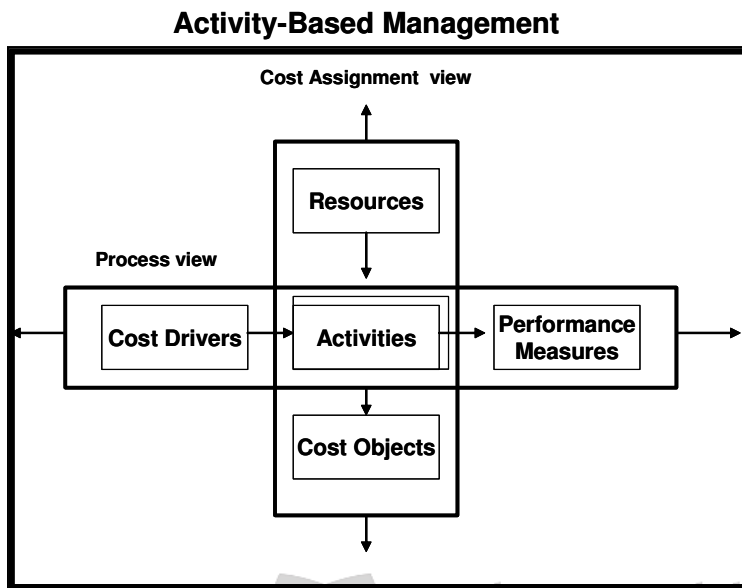


The importance of linking ABC to ABM is important as ABM is management analysis that brings the full benefit of ABC to the organisation. The two concepts guide organisational efforts to adapt business strategies to better meet competitive pressures and improve business operations.

#### **4.4.3 The importance of linking ABM and ABC**

ABC and ABM are made for each other. ABC supplies information needed to manage activities for business improvement. ABM uses information in various analyses designed to yield improvement. Figure 4.4 shows this relationship. ABC is in the center, at the heart of activity-based management. ABM encircles ABC, drawing its power from the ABC data base (Turney, 1991: 140).

Figure 4.4 ABM model



(Source: Turney, 1991: 141)

The key relationship between ABC and ABM is that ABC provides important information about cost drivers, activities, resources, and performance measures while ABM is a discipline that improves the value of its products and services (Huang, 1999: 25).

For the researcher it is evident that ABM uses ABC information to help meet important business goals be it improved value for customers or profits earned. It can be said that ABM helps improve the business strategic position as well as its strategic capability. The researcher will now discuss ABC within Eskom transmission that forms the basis of this research project.

#### 4.5 ABC WITHIN ESKOM TRANSMISSION

ESKOM Transmission currently employs an accounting software system called SAPR3. This system (SAPR3) makes provision for the use of an Activity based costing system to be utilised. It is believed that Eskom Transmission and Transmission Southern Grid in particular are following an activity based costing approach. The foundation of this research is to ascertain the use of such system's effective contribution towards decision-making and any shortcomings that might exist.

Maintenance and labour are seen as the main cost drivers in this service related industry. Over the years ABC has made a significant contribution towards cost reduction and decision-making however, the question exists if ABC has been properly implemented, exercised and applied.

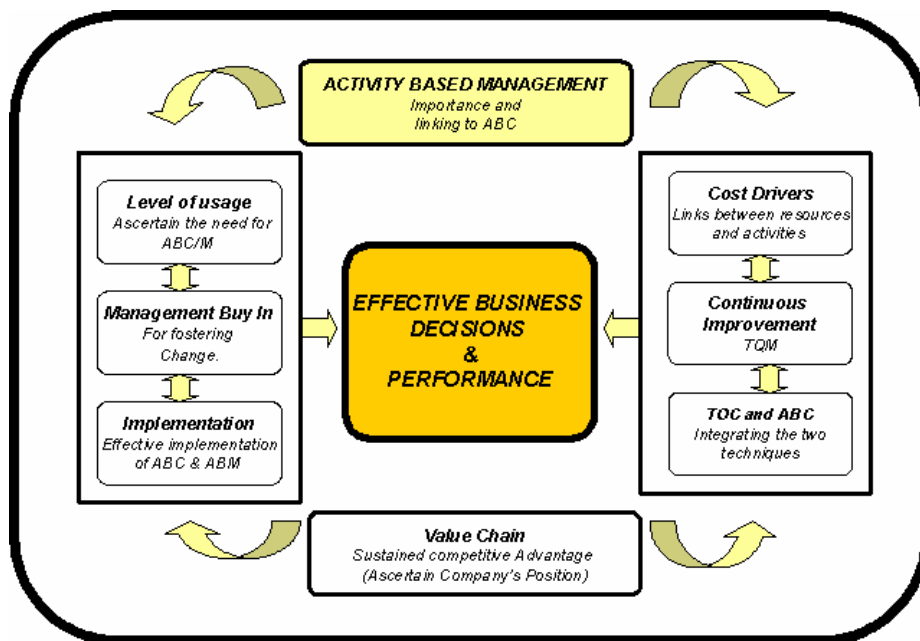
A model that will follow, depicts Eskom Transmissions current status from initiation through to utilisation of the ABC system.

According to Innes and Mitchell (1991: 21) the value of regular cost reports for maintenance remains imperative as each asset can be seen as an individual cost driver. This direct attention on those machines/assets, which suffer the greatest maintenance cost, will be useful in focusing preventative maintenance effort, and capital investment strategy.

Cost of maintenance in the electricity supply industry is primary. ABC work in this area initially followed a similar pattern to that described for material related overhead, but found to have a significant common cost driver i.e. the incidence of asset breakdown and preventative maintenance (Innes and Mitchell, 1991: 21).

A proposed model for Eskom transmission is depicted in figure 4.5 indicating the relevant elements that will have an important impact on effective business decisions and business performance.

Figure: 4.5 Proposed Eskom Transmission Model



*(Researchers own construction: ABM Model for effective decision making, 2009)*

Eskom Transmission has fallen short in terms of cost reduction and continuous improvement strategies. ABC has been implemented on an ad hoc basis with no formal introduction and implementation strategy by management. The need for a formalised ABC/M model is to reap the benefits of such a continuous improvement strategy, especially in these trying economic conditions.

The proposed model speaks to various aspects that impacts effective decision making and improved business performance. The level of usage needs to be

established first in determining the need for the use of an ABC system within the organisation. Secondly management buy in is crucial as this forms the backbone for effective implementation. Management buy in is most crucial in the success of ABC implementation. Garrison and Noreen (2000: 325) argue that top management is needed as it is difficult to implement changes in an organisation without their full support, and to make sure the system is used for its intended purpose.

The effective implementation of ABC is the next step which involves establishing the requirements and financial position of the business. ABC is an evolving discipline that requires substantial professional judgment and creativity if it is to be successfully implemented. Nevertheless, the effort can translate cost data into a reliable information source that management can employ to make sound decisions (Whittaker, 2005: 2).

Fourthly, the value chain is a critical process in establishing the firm's position in the industry and its competitive advantage. The value chain speaks to these elements as primary activities need to be identified to supply the needs of customers in the quest towards competitive advantage. Once this is established, the value chain further contributes towards continuous improvement strategies such as TOC, TQM and ABC as stipulated in this figure. Lastly, integrating TOC and ABC is a sound principle as this ensures emphasis on both short term and long term constraints towards improved decision making.

As indicated in the literature, the various elements such as management buy-in and sound implementation need to be taken cognisance of. The various continuous improvement aspects such as TOC, TQM and the importance of cost drivers form an integral part of the process towards much desired sound decision making and business performance

There exists a strong linkage between ABM and the various elements depicted in figure 4.5. Initial need, buy in and implementation are interrelated and precedes each other.

#### **4.6 CONCLUSION**

ABM focuses on the effective restructuring of work to achieve lasting cost reductions through the use of ABC. This involves reducing time and effort to perform activities, eliminating unnecessary activities and deploying resources made available by improvement efforts. These efforts are likely to improve quality as they reduce cost.



ABM as a management strategy brings information empowerment to a business aspiring world class status. It puts ABC information in the hands of people doing the improvement and analysis of this information increases their power to improve.

ABC & ABM's process and activity analysis is one of the most powerful tools at the disposal of management. It facilitates proper visibility of an organisation's processes and activities leading to a better understanding of the business.

Chapter 4 dealt with ABC and ABM as a cost strategy for business, the study will now attempt to confirm the value and relevance of ABC and as an effective instrument towards better decision making and performance in business.

Chapter five will deal with the methodology of this study.



## **CHAPTER 5**

### **RESEARCH METHODOLOGY**

#### **5.1 INTRODUCTION**

Gupta and Baxendale (2008: 11) state that when a business is in economic recession, the company will learn to survive by reviving itself by adopting new techniques or innovations. Accurate information is imperative if a company wants to seize competitive advantage. ABC, which is an advanced management accounting system, focusing on accuracy of product costs, is claimed to be able to provide such accurate information for effective decision making and business performance (Chongruksut, 2002: 97).

The framework for the empirical research was provided in chapters two, three and four which formed the literature study for this research. The focus of this chapter is on the research instruments which were central to the gathering of data for this study. This includes, amongst others, a discussion on the research concerning the measuring instruments, reasons for selecting a questionnaire as a quantitative instrument as well as focus group discussions and semi-structured interviews as qualitative instruments. The construction of question items is provided and the format of the final questionnaires is included. This chapter also outlines how the sample was determined and how the questionnaires were distributed.

The objective of this study as indicated in Chapter one pg 1 was to:

Determine the importance of ABC for improved costing at Eskom Transmission Southern Grid;

Investigate the importance of ABM and ABC for improved business decisions making ;and

Suggest how ABC and ABM can be utilized at Eskom Transmission in the pursuit of improved business performance.

The purpose of this chapter is to identify the research methodology most appropriate to address the research problem: measuring the impact of ABC and ABM as decision making tools on effective business performance within Eskom Transmission Southern Grid. This will be done by discussing the research design and methodology and outlining the population and sampling techniques employed to gather data for this investigation.

What follows in the next section is a discussion on the research design for this study.

## **5.2 RESEARCH DESIGN**

To operationalise the objectives of this study, it is important to explore the research design which forms the framework of the investigation.

Research design refers to the strategy to integrate the different components of the research project in a cohesive and coherent way. Feng (2006: 8) posits that research design may be regarded as a means to structure a research project in order to address a defined set of questions. According to Adams and Schvaneveldt (1985: 103) “research design refers to a plan, blueprint or guide for

data collection and interpretation – a set of rules that enables the investigator to conceptualise and observe the problem under study”.

Research design is the general strategy a researcher will follow to solve the research problem, in that it provides the overall structure for the chosen procedures (Leedy and Ormrod, 2005: 85).

The research design for this study may be conceptualised as follows:

The research will be conducted at ESKOM Transmission, Southern Grid in Port Elizabeth. As outlined in Chapter 2, this division of ESKOM is responsible for the transportation of bulk electricity and maintenance of key assets. To yield data for this investigation, a mixed - method design will be used for data collection. This involves employing a combination of quantitative and qualitative techniques which minimises the weaknesses of a single approach thus increasing both the reliability and validity of the data. To this end, a purposive sample will be drawn from the population which include middle managers, engineers and finance staff at ESKOM Transmission Southern Grid. A questionnaire will be administered to this representative sample and focus group interviews as well as semi-structured interviews will be conducted.

The researcher will now provide a brief description of the sampling technique employed in this study.

### 5.3 POPULATION AND SAMPLE SELECTION

Blaikie (2003: 161) defines a population as an aggregate of all units or cases that conform to some designated set of criteria. Population elements are single members or units of a population; they can be such things as people, social actions, events, places or times. A population is defined according to the purposes of the research being undertaken. It can be whatever the researcher needs it to be (Blaikie, 2003: 161).

The target population of this study comprised professionals (managers, engineers and technicians) of all races who have been with the company for more than three years. Purposive sampling was used as the researcher identified these professionals employed by ESKOM in the Transmission division, Southern Grid in Port Elizabeth.

According to Scott and Morrison (2006: 219) sampling refers to the activities involved in selecting a subset of persons or things from a larger population, also known as a sampling frame. Methods used to select the sample will determine the nature and validity of the findings that are generated from the study of that sample.

Christensen (2001: 198) defines representative sampling as the sample where participants have the same characteristics as the people in the population.

For the purpose of this study, a purposive sample will be drawn from a population of eleven middle managers, fifteen engineers and fifteen finance staff. Christensen (2001: 198) believes this technique to be valid as it provides a sample that is representative of the population.

Purposive sampling was used for this study. A purposive sample of managers was selected for this study. From the sample, ten middle managers and twelve engineers were selected at ESKOM Transmission Southern Grid in Port Elizabeth to complete the questionnaire. Focus groups interviews with seven engineers and semi-structured interviews with seven finance staff were also conducted. The research methodology will be presented in the next section.

#### **5.4 RESEARCH METHODOLOGY**

According to Leedy and Ormrod (2005: 12) this refers to the researcher's general approach in carrying out the research project. The approach taken normally indicates which research strategies or tools need to be selected. The term method is used to indicate which approach the researcher decides to follow in gathering and analysing the data.

Collis and Hussey (2003: 53) identify a continuum comprising two main research paradigms, namely the positivistic paradigm which signifies quantitative research method and the phenomenological paradigm which signifies the qualitative method.

The positivistic approach attempts to explain social phenomena by establishing a relation between variables which are information converted into numbers. The phenomenological paradigm suggests that social reality lies within the unit of research, and that the act of investigating the reality has an effect on that reality. This paradigm pays considerable regard to the subjective state of the individual (Collis and Hussey, 2003: 54)

The research method for this study includes a combination of qualitative and quantitative research.

A discussion on the two approaches will now be presented.

#### **5.4.1 Positivist paradigm**

Historically the positivistic paradigm (quantitative research) in the social sciences is based on the approach used in the natural sciences, such as biology, botany and physics. The positivistic approach seeks the facts or causes of social phenomena, with little regard to the subjective state of the individual. Thus logical reasoning is applied to the research so that precision, objectivity, and rigour replace hunches, experiences, and intuition as the means of investigating research problems. Positivism is founded on the same way as studies conducted in the natural sciences. It is based on the assumption that social reality is independent of us and exists regardless of whether we are aware of it (Collis & Hussey, 2003: 84).

Sutter (1998: 87) describes quantitative research as studies that test specific hypotheses, usually stated in advance, and that incorporate measures which can be analysed statistically. This type of research, the author states, uses tables or charts to display findings which can be generalised beyond the sample to a wider population. The researcher is distant in a sense, and guards against bias and other influences which may skew the results.

The primary characteristic of positivistic research is that it is a descriptive type of research where the goal is to attempt to provide an accurate description or picture of a particular situation or phenomenon. This approach attempts to

identify variables that exist in a given situation and, at times to describe the relationship that exists between variables (Collis & Hussey, 2003: 86).

Winberg (1997: 30) states that quantitative research feels like proper research and it can be very satisfying to do. The methods and approaches are clear and usually involve the following steps:

- Pose of the research question;
- Gather data relevant to the research question;
- Systematise or order the data in ways that makes sense to the researcher;
- Analyse the data and
- Come to conclusions, and or make recommendations, based on the research findings.



Essentially, positivists look for the existence of a constant relationship between events, or between two variables. The positivist notion is that science becomes credible and possible because every scientist looking at the same bit of reality sees the same thing. However, it has been amply demonstrated that what observers 'see' is not determined simply by the characteristics of the thing observed; the characteristics and perspective of the observer also have an effect (Robson, 2002: 21).

For the purpose of this study the researcher selected a structured questionnaire which was administered to ten middle management and twelve engineers as the research instrument for the quantitative method.

The focus now turns to the phenomenological paradigm as the other method used to gather data for this investigation.

#### **5.4.2 Phenomenological paradigm**

The phenomenological paradigm is also known as the qualitative research method to data collection. Qualitative research is an imperative, multi-method approach that investigates people in their natural environment (Denzin & Lincoln, 2003). This definition has three primary components that are essential to understanding the nature of qualitative research. The first component is that qualitative research is interpretative. The second component is that qualitative research is multi-method. This means that a variety of methods are used to collect data. The third component is that it is conducted in the field or in the person natural surroundings, such as a school classroom, the playground, a board meeting, or a therapy setting (Christensen, 2001: 51).

Robson (2002: 175) reiterates that phenomenological approaches to qualitative research stress the importance of reflexivity, i.e. an awareness of the ways in which the researcher as an individual with a particular social identity and background has an impact on the research process. They take the view that 'the ability to put aside personal feelings and preconceptions is more a function of how reflexive one is rather than how objective one is because it is not possible for researchers to set aside things about which they are not aware.

Phenomenological research focuses on the subjective experience of the individuals studies. What is their experience like? How can one understand and describe what happens to them from their own point of view? As the term suggests, at its heart is the attempt to understand a particular phenomenon. Phenomenology also had a major influence on the general development of



qualitative methodology (Robson, 2002: 195). The idea of qualitative research is to purposefully select informants (or documentation or visual material) that will answer the research question. Qualitative research thus requires that the data to be collected must be rich in description of people and places (Thomas, 2003: 65).

De Vos (2005: 357) describes qualitative research as a “multi- perspective approach (utilizing different qualitative techniques and data collection methods) to social interaction, aimed at describing, making sense of, interpreting or reconstructing this interaction in terms of the meanings the subject attach to it”

Van Maanen (1993) is of the opinion that qualitative data is “rich, full, earthy, holistic,” real”; their face validity unimpeachable, they preserve chronological flow where that is important and suffer minimally from retrospective distortion; and they, in principle, offer a far more precise way to assess causality in organisational affairs” .

Qualitative research is inductive rather than deductive. Qualitative researchers develop their understanding in the course of the research process; they don't collect data in order to support preconceived hypotheses or theories. In qualitative methodology the researchers look at people in their contexts. The contexts can include people's past as well as the situations in which they currently find themselves. People are not reduced to variables in qualitative research. Qualitative methods allow researchers to stay close to the real or empirical world (Winberg, 1997: 41).

For the purposes of this study, focus group interviews were conducted with engineers and semi-structured interviews with seven finance staff at ESKOM Transmission Southern Grid in Port Elizabeth. Welman, Kruger and Mitchell

(2005: 201) state that focus groups are also described as group in-depth interviews. These groups consist of a small number of individuals or interviewees who are drawn together for the purpose of expressing their opinions on a specific set of open questions.

Focus group interviews are essentially a qualitative technique for collecting information. The researcher directs the interaction and inquiry either in a very structured or unstructured manner, depending on the aim of the investigation. The aim of using such focus group interviews is not to replace individual interviewing, but to gather information that can perhaps not be collected easily by members of individual interviews (Welman, Kruger and Mitchell, 2005: 201).

Wilkinson and Birmingham (2003: 45) state that the semi-structured interview allows the interviewer and participant more flexibility. The interviewer directs the interview more closely. More questions are pre-determined though there is sufficient flexibility to allow the participant an opportunity to shape the flow of information.

Scott and Usher (2000: 109) posit that in a semi-structured interview, participants are encouraged to set the agenda of the interview, though the presence of an interviewer and other forms of control exerted by them means that the participant never has full control of the setting. The interviewer sets up the interview, is involved in the negotiation of place, purpose and agenda at the initial stages and asks questions, prompts answers and elicits reformulations of responses. Participants provide answers and give accounts of their lives in terms of their understanding of the settings in which they are located. Thus, gender, race, class and other types of power relations are conveyed by the researcher and form an essential backdrop to the answers that participants provide (Scott & Usher, 2000: 109).

To collect data for the qualitative method, semi-structured interviews will be conducted with finance staff at ESKOM Transmission, Southern Grid in Port Elizabeth.

In the next section the researcher will provide a detailed discussion on the mixed method approach.

### **5.4.3 Mixed-method approach**

A mixed-method approach for data collection will be used in this study.

De Vos (2005: 358) states that a combined-method study can be described as one in which the researcher uses multiple methods of data collection and analysis. According to the author, mixed-method studies are those that combine the qualitative and quantitative approaches into the research methodology of a single study or multi-phased study.

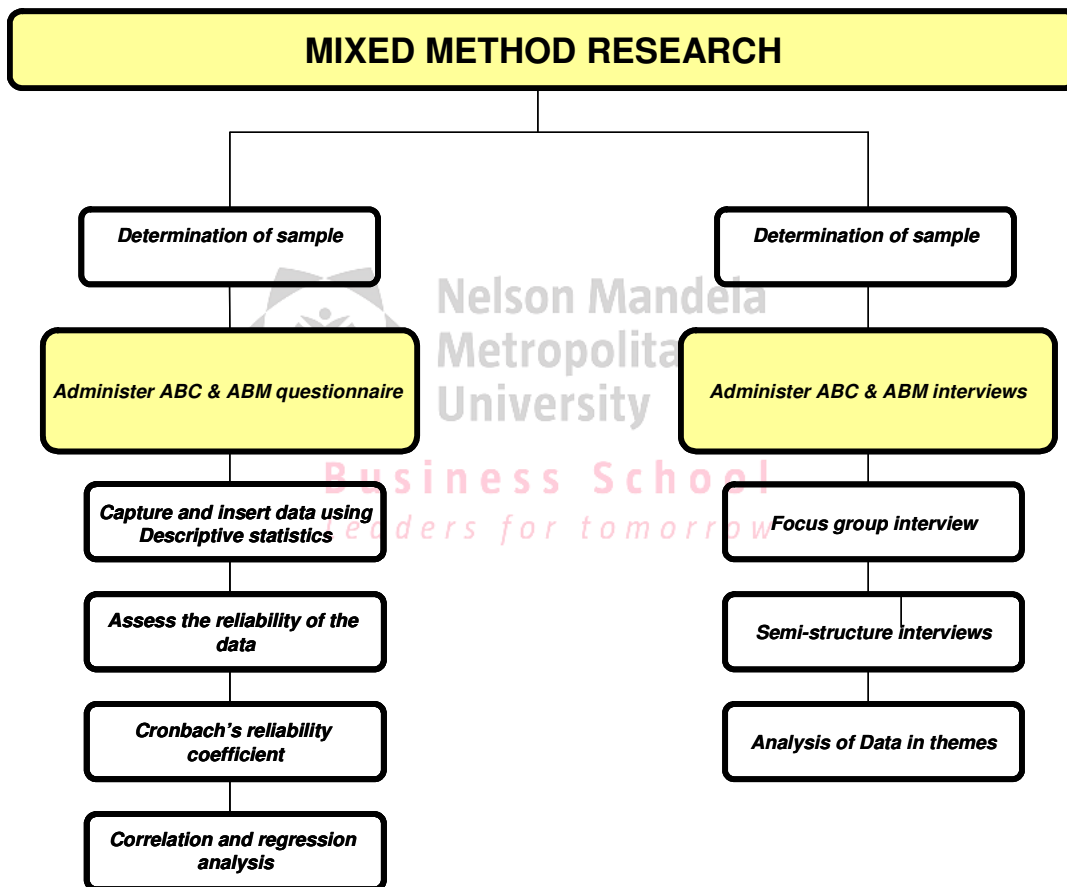
The authors state further that the quantitative approach is highly formalised, and more explicitly controlled than the qualitative approach with a range that is more exactly defined, and that is relatively close to the social sciences. In contradistinction, qualitative approaches are those in which the procedures are not as strictly formalised, while the scope is more likely to be undefined, and a more philosophical mode of operation is adopted (Mouton & Marais, as quoted by De Vos, 2005: 357).

Muijs (2004: 9) refers to this combination of qualitative and quantitative methods as a mixed method design. Mixed method, the author states, is a flexible approach where the research design is determined by what the researcher wants

to find out, rather than by any predetermined epistemological position. In mixed method research, qualitative or quantitative components can predominate, or both could have equal status (Muijs, 2004:9).

Figure 5.1 depicts the mixed method approach employed in this study.

Figure: 5.1 Mixed method approach



(Source: Own model, 2009)

The design of the questionnaires will now be covered in the next section.

### 5.4.3.1 Design of the Questionnaires

For the purposes of the study, structured questionnaires will be distributed to ten middle-mangers and twelve engineers at ESKOM Transmission Southern Grid to complete. This forms part of the quantitative method of data collection.

Scott and Morrison (2006: 192) posit that the key issue is that questionnaires are designed to provide measurement. Above all, this requires questions that must be judged in terms of the question's capacity to promote responses that are linked directly to that which the researcher set out to measure, and an equivalence in each question and its asking.

Muijs (2004: 45) points out that it is important for researchers to take heed not only of the way questionnaires are designed, but also of how questions are worded as these aspects will affect the answers participants give. It is therefore important; the author states that researchers think carefully about what kind of questions are asked.

One questionnaire was used in this research to obtain information on ABC and ABM's impact on the organisation business performance through improved decision making. The questionnaire used in this study contains 40 statements that identify and measure the key aspects of ABC and ABM. Each statement corresponds to the model for improved decision making and business performance as stipulated in Fig. 4.5.

The questionnaire comprises a 4 point scale and the respondents were instructed during the administration of the questionnaires by the researcher to mark the most suitable answer. The scale ranges from 0 to 4 as follows:

1. Strongly agree;
2. Agree;
3. Strongly disagree;
4. Disagree.

#### **5.4.3.2 Semi-structured Interviews**

For the purposes of this study, semi-structured interviews will be conducted with seven finance staff members within Eskom Transmission Southern Grid. This forms part of the quantitative method of data collection for this study.

Scott and Usher (2000: 109) posit that in a semi-structured interview, participants are encouraged to set the agenda of the interview, though the presence of an interviewer and other forms of control exerted by them means that the participant never has full control of the setting. The interviewer sets up the interview, is involved in the negotiation of place, purpose and agenda at the initial stages and asks questions, prompts answers and elicits reformulations of responses. Participants provide answers and give accounts of their lives in terms of their understanding of the settings in which they are located. Thus, gender, race, class and other types of power relations are conveyed by the researcher and form an essential backdrop to the answers that participants provide (Scott & Usher, 2000: 109).

#### **5.4.3.3 Focus group interviews**

Focus group interviews will be conducted with seven engineers within Eskom Transmission Southern Grid.

Robson (2002: 284-285) describes a focus group as a group interview on a specific topic, which is where the focus comes from. It is an open-ended group discussion guided by the researcher, typically extending over at least an hour, possibly two or more. In terms of the size of the group, Robson (2002:285) further states that figures of eight to twelve are usually thought suitable although smaller group sizes have been used.

A rationale for the selected mixed-method approach for this study will now be provided.

#### **5.4.4 Rationale for selected paradigm**

The author will be conducting both a phenomenological and positivistic study. The nature of the research topic warrants both paradigms as direct relationship between the dependent and independent variables can be found and the need for the researcher and respondents' full involvement in the research program. The author intends gathering information from groups or individuals in order to arrive at a meaningful conclusion. It is the researcher's intention to analyse the data for this study using both these methods, hence a sound understanding of the concepts is deemed necessary.

Verma and Mallick (1999: 27) posit that qualitative research involves the gathering of evidence that reflects the experiences, feelings or judgments of individuals taking part in the investigation of a research problem or issue whether as subjects of as observers at the scene. The authors state further that qualitative research is often concerned with social processes and that the main feature of qualitative research is that the meaningful explanations of social activities requires substantial appreciation of the perspectives, culture and world-view of the actors involved (Verma and Mallick, 1999: 27).

Christensen (2001: 34) is of the opinion that quantitative research is a descriptive type of research where the goal is to attempt to provide an accurate description or picture of a particular situation or phenomenon. This approach does not try to ferret out cause-and-effect relationships. Instead it attempts to identify variables that exist in a given situation and, at times to describe the relationship that exists between these variables.

A combined-method study can be described as one in which the researcher uses multiple methods of data collection and analysis (De Vos, 2005: 358). According to the author, mixed-method studies are those that combine the qualitative and quantitative approaches into the research methodology of a single study or multi-phased study.



## **5.5 MEASUREMENT CHARACTERISTICS OF A QUANTITATIVE RESEARCH INSTRUMENT**

Two distinct aspects need to be considered under a quantitative research instrument namely validity and reliability.

### **5.5.1 Validity**

Validity was arrived at by considering both content validity and construct validity. The content validity was supported by the specific questionnaire items constructed strictly according to the definition of each section. The construct validity was underpinned by the fact that although the questionnaire focused on different sections, the items all dealt with aspects which were important



concerning developing sound ABC and ABM practices that lead to improved decision-making.

Validity is a measure of the how well the research design captures the variable under inquiry. Thinking back to how variables are operationalised, validity then concerns the degree to which the variables in question purport to measure a given phenomenon (Feng, 2006: 12).

Denscombe (2002: 101) describes validity as the accuracy of questions asked, the data collected and the explanations offered. Generally it relates to the data and the analysis used in the research. It refers to the quality of data and explanations and the confidence one might have that it accord with what is true and what is real.



### 5.5.2 Reliability

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Reliability is a measure of the repeatability and stability. With the question of reliability, the concern is whether the results will be consistent under similar conditions (Feng, 2006: 12). Hollaway and Jefferson (2000: 79) further state that reliability refers to the consistency and repeatability of results.

Denscombe (2002: 101) posits that reliability relates to the methods of data collection and the concern that they should be consistent and not distort the findings. Generally it entails an evaluation of the methods and techniques used to collect data. It refers to the ability of a research process to provide results that do not vary from occasion to occasion and that do not vary according to the particular undertaking the research.

This study employed focus group interviews and semi-structured interviews to support the reliability of especially the qualitative research findings.

## **5.6 SUMMARY**

This chapter set out the methods for data collection and enquiry. The approach of this study is the utilisation of a mixed-method approach in an investigation to determine the utilisation and impact of ABC methods within ESKOM Transmission and to provide a model to improve the effectiveness of decision-making for improved business performance in the organisation.

To gather data for the investigation, focus group interviews were conducted with engineers and semi-structured open-ended interviews with (senior/middle?) management at ESKOM Transmission, Southern Grid in Port Elizabeth. Management also completed a questionnaire.

The data analysis was done by running frequencies and cross-tabulations of elicited responses by making use of the statistical package SPSS10 (Statistical Package for the Social Sciences)

The next chapter explores the data analysis for this study.

## CHAPTER 6

### DATA ANALYSIS AND INTERPRETATION

#### 6.1 INTRODUCTION

The previous chapter discussed the methodology followed within this research study. The goals of the research objectives were presented. A schematic description of the research design was represented in Figure 5.1. The chapter also alluded to the research population and sample; the respective reliability and validity of the methodology, the process of data collection, capturing and analysis. This chapter presents and discusses the results of the correlation analysis of the research and the assessment of the reliability of the research data. Descriptive statistics was used to summarise quantitative data and relationships if any, which are not apparent in the raw data.

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According to Schoenbach (2004: 461) whether or not we believe, in Albert Einstein's words, that "the Lord God doesn't play dice with the universe", there are many events in the world that we ascribe to "chance". When we roll a die, the resulting number is generally unpredictable and does not (or at least, should not) follow any evident pattern. Similarly, when we draw five cards from a freshly-shuffled, unmarked deck, we know that some outcomes are more or less likely than others (e.g., a pair is more likely than three of a kind), but we cannot predict what cards we will draw. The theories of probability and statistics were born in the gaming parlours of Monte Carlo and came of age in the fields of the British countryside. The computer revolution put their power, for good or for whatever, into the hands of any of us who can click a mouse (Schoenbach, 2004: 461).

This study employed a mixed-method approach, which involved the quantitative and qualitative method of data collection. Golafshani (2003: 598) states that a quantitative researcher attempts to fragment and delimit phenomena into measurable or common categories that can be applied to all of the subjects or wider and similar situations. The researcher's methods involve the "use of standardised measures so that the varying perspectives and experiences of people can be fitted into a limited number of predetermined response categories to which numbers are assigned (Golafshani, 2003: 598).

Denzin and Lincoln (2003: 9-11) concede that qualitative research, as a set of interpretive activities, privileges no single methodological practice over another. The authors explain that qualitative research, as a set of practices, embraces within its own multiple disciplinary histories constant tensions and contradictions over the project itself, including its methods and the forms its findings and interpretations take. The field sprawls between and crosscuts all of the human disciplines and its practitioners are sensitive to the value of the multi-method approach.

De Vos (2005: 335) states that a qualitative study involves an inseparable relationship between data collection and data analysis in order to build a coherent interpretation of the data. An assumption of the qualitative researcher is that the human instrument is capable of ongoing fine-tuning in order to generate the most fertile array of data.

The data collection for this study took place in April and May 2009 and was carried out by the researcher. Eskom Transmission Southern Grid was focused on for relevance and easy access for research purposes. This assisted for quick response rates, efficiency gathering the data, and to minimize the disruption within the targeted departments.

The following empirical methods were used to collect data for this study:

*Questionnaires* – Ten managers and twelve engineers were conducted in Eskom Transmission Southern grid. Each section had to complete one questionnaire.

*Semi-structured interviews* – conducted with seven engineers.

*Focus group interviews* – conducted with finance staff of Eskom Transmission Southern grid.

The focus now turns to the interpretation and analysis of the data for this study.

## 6.2 CHARACTERISTICS OF THE TARGETED SAMPLE



The characteristics of the targeted sample will now be described and discussed.

### 6.2.1 Response rate

As indicated in Table 6.1, a total of 22 questionnaires were e-mailed to a sample of Eskom Transmission personnel in the Southern Grid: middle management, finance manager and engineers. The participants in the study was representative of engineers, managers and finance staff who utilise and implement ABC and ABM strategies. These were considered the major sections dealing directly with ABC. 22 questionnaires were acknowledged by the addressees. 21 questionnaires were returned by the participants who represent a response rate of 95.4percent. The response rates are reflected in Table 6.1.

**Table 6.1 Response rates of structured questionnaire**

	MANAGERS	ENGINEERS	FINANCE	TOTAL
Population	11	15	1	26
Sample	10	11	1	22
Responses	10	10	1	21
% returned	100%	90.9%	100%	95%

### 6.2.2 Demographic data



Nelson Mandela  
Metropolitan  
University

Demographic data was collected and this is reflected in Table 6.2. These statistics revealed that 95 percent throughout of the participants returned the questionnaire. The majority of participants (38 percent) were in service between 5-10 years, with the lowest (9 percent ) being between 21 and 25 years. A great deal of experienced staff (19 percent ) participated as well. The majority of the participants were aged between 31 and 40 and 47.6 percent completed the questionnaires.

**Table 6.2 Demographic data of participants**

GENDER			RACE		
	Frequency	Percentage		Frequency	Percentage
Male	16	76%	Black	9	43%
Female	5	24%	White	7	33%
			Coloured	5	24%
YEARS WORKING IN THE ORGANISATION					
	Frequency	Percentage	Cumulative Frequency	Cumulative %	
5 to 10	8	38.1%	8	38.1%	
11 to 15	6	28.6%	14	66.6%	
16 to 20	1	4.8%	15	71.4%	
21 to 25	2	9.2%	17	80.9%	
26 to 30	4	19.3%	21	100%	
AGE					
	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage	
21 - 30	3	14.3%	3	14.3%	
31 - 40	10	47.6%	13	61.9%	
41 - 50	2	9.5%	15	71.4%	
51 - 60	5	23.8%	20	95.2%	
61 - older	1	4.8%	21	100%	

In the next section aspects in the analysis and interpretation of the data will be considered.

### 6.2.3 Analysing and interpreting the data

Schoenbach (2004: 461) posits that the usual analysis approach is to begin with descriptive analyses, to explore and gain a “feel” for the data. The analyst then turns to address specific questions from the study aims or hypotheses, from findings and questions from studies reported in the literature, and from patterns suggested by the descriptive analyses. Before analysis begins in earnest, though, a considerable amount of preparatory work must be carried out.

Schoenbach (2004: 461) outlines the following as the major objectives to consider in analysis of data for research studies:

- Evaluate and enhance data quality;
- Describe the study population and its relationship to some presumed source (accounts for all in-scope potential subjects; compare the available study population with the target population);
- Assess potential for bias (e.g., non-response, refusal, and attrition, comparison groups);
- Estimate measures of frequency and extent (prevalence, incidence, means, medians);
- Estimate measures of strength of association or effect;
- Assess the degree of uncertainty from random noise (“chance”);
- Control and examine effects of other relevant factors;
- Seek further insight into the relationships observed or not observed
- Evaluate impact or importance (Schoenbach, 2004: 461).



For the purposes of this study, the questionnaire will be analysed as follows:

#### **6.2.4 Analysis of the questionnaire**

For this study, composite tables and graphs were used. The mean values were used to answer the research question. The most positive and most negative responses were also discussed. This will give insight into how staff within ESKOM Transmission Southern Grid perceived ABC as a decision making tool towards improved financial business performance. SPSS will be used to analyse the data gathered for interpretation.

SPSS is a programme which provides a very wide range of statistical procedures. Creating a data set with SPSS simply involves defining the characteristics for each column in the data set. SPSS provides a wide range of summary statistics also commonly known as descriptive statistics, while at the same time also providing for incorporating summary statistics into graphical displays (Robson, 2002:407).

The researcher will now present the data analysis of this research.

### **6.3 DATA ANALYSIS**

Once data were collected, it was necessary to employ statistical techniques to analyse the information, as this study is quantitative in nature too.

### 6.3.1 Cronbach's Alpha Coefficient

Cronbach's Alpha coefficient is typically equated with internal consistency (De Vellis, 1991). The Cronbach's Alpha is interpreted as a coefficient Alpha and its value ranges from 0 to 1. Sekaran (2000) advises that when calculating Cronbach's reliability coefficient, reliabilities less than 0.6 are considered poor, reliabilities within 0.7 ranges are considered acceptable and those coefficients over 0.8 are considered good.

### 6.3.2 Biographical data of respondents

The quantitative phase of research provides for biographical data of the respondents. The aim of the items in this section (Section A of the questionnaire, items 1 to 7) was to gather information which could possibly be utilised when interpreting data.

This study makes use of the 4-point Lickert scale to obtain ratings, on a continuum from strongly agree to (1) to strongly disagree (4). The means scores represent the aggregate of the responses on the range from "strongly agree" to "strongly disagree". In the interpretation of the individual items, mean scores are interpreted in the following manner:

- A score of 2.25 and below indicates a high level of satisfaction;
- A score of between 2.25 and 3 indicates an acceptable level of satisfaction;
- A score of between 3 and 3.75 indicates room for improvement;
- A score of 3.75 and above signals a problem that is in need of urgent attention.

### 6.3.2.1 Table and graph 6.3

Table 6.3 reflects the responses on a composite table and graph. In this part of the questionnaire the participants were asked to indicate their understanding of activity-based management.

<b>N</b>	<b>Mean</b>	<b>% Agree Total</b>	<b>% Disagree Total</b>	<b>DESCRIPTION</b>
21	1.00	100.00	0.00	Sound financial behaviour is paramount in business today.
21	1.00	100.00	0.00	Financial behaviours in any organisation play a vital role
21	1.00	100.00	0.00	Management buy in is important before ABC implementation.
21	1.00	100.00	0.00	ABC is an effective tool towards cost reduction.
21	1.48	100.00	0.00	ABC assumes that activities cause cost.
21	2.62	52.38	47.62	Cost information is used in making a wide range of operational decisions.
21	2.19	66.67	33.33	The manager fosters a positive environment where change is likely to occur. Continuous improvement.
21	1.43	95.24	4.76	Eskom Transmission's biggest budgetary challenge is overspending.
21	3.67	9.52	90.48	ABC and ABM are strongly related in the grid.
21	1.90	95.24	4.76	ABC assists the Grid with budgeting more accurately
21	1.86	95.24	4.76	ABC is used to analyse business Financial performance in the Grid
21	1.00	95.24	4.76	There is a need within the organisation to reduce cost - to be more cost effective
	<b>1.69</b>	<b>84.13</b>	<b>15.87</b>	
	<b>N=</b>	<b>17.67</b>		

**Table 6.3 Composite table and graph indicating the perceptions of the participants regarding understanding of activity-based management in the Grid.**

### **6.3.2.2 General discussion of the results**

In table 6.3, most of the respondents (84 percent ) indicated that they possessed a good understanding of ABC in the Grid. Only 16 percent of the respondents disagreed with statements posed that constituted a poor understanding of ABC. What was positive is the high level of understanding of the concept ABC in the Grid as most respondents could present a good explanation of the concept. This foundation is imperative in making the concept effective and useful in the Grid.

### **6.3.2.3 Detailed discussion of the results**

The research revealed that the following factors were of significant importance in the Grid, is stipulated as follows:

- 100 percent of the participants concurred that sound financial behaviour is paramount in business today, thus management buy-in is important before ABC implementation;
- ABC however needs a management controlling system and it was concerning to see that participants not recognising the relationship between ABC and ABM. Only 9.5 percent of the participants agreed a relationship existed, with the majority (90.5 percent) feeling no relationship exists;
- Whilst cost information is imperative to make a wide range of operational decisions, only 47 percent of the participants agreed that it was imperative in decision making, 52 percent disagreed.

### 6.3.2.4 Summary of results

The average mean-score = 1.69 indicate a high level of understanding of the concept of ABC. The results suggest that the Grid has a positive perception and mindset with regard to ABC. The Grid is already utilising ABC to a large extent with regard to budgeting, cost reduction and financial analysis.

### 6.3.3.1 Table and graph 6.4

Table 6.4 reflects the responses of participants with regard to the questions asked pertaining continuous improvement and quality in the organisation.

N	Mean	% Agree Total	% Disagree Total	DESCRIPTION
21	2.29	66.67	33.33	Concept of continuous improvement is promoted by management.
21	3.14	33.33	66.67	ABC is seen as continuous improvement concept within the southern Grid.
21	3.19	4.76	95.24	ABM is managing and controlling the firm's performance using ABC information as the focus for decision-making.
21	3.00	19.05	80.95	ABM is managing and controlling the firm's performance using ABC information as the focus for decision-making.
21	3.00	52.38	47.62	Total quality management is employed as a cost reduction tool in the organisation
21	3.81	9.52	90.48	The theory of constraint (TOC) as a concept is utilised in the Grid
21	1.95	66.67	33.33	ABC can impact business decisions – i.e. investments and asset purchases
	<b>2.91</b>	<b>36.05</b>	<b>63.95</b>	
	<b>N=</b>	<b>7.57</b>		

**Table 6.4 Composite table and graph indicating the perceptions of the participants regarding continuous improvement and quality in the Grid.**

### **6.3.3.2 General discussion of the results**

The mean of this section of questionnaire indicates that the participants had a negative perception of certain aspects pertaining to continuous improvement and quality in the Grid as related to ABC and ABM in the organisation. In Table 6.2 the concept of continuous improvement and quality in the organisation needs to be carefully considered.

### **6.3.3.3 Detailed discussion of the results**

The research revealed that the following factors were least important in the Grid:

- ABM is managing and controlling the firm's operational performance using ABC information as the focus for decision-making, 95 percent disagreed on this question;
- ABM is managing and controlling the firm's performance using ABC information as the focus for decision-making, 80.95 percent disagreement;
- The theory of constraint (TOC) as a concept is utilised in the Grid, mean score: 95 percent disagreement;
- Total quality management is employed as a cost reduction tool in the organisation 47.6 percent disagreement.

### **6.3.3.4 Summary of results**

Participants perceived continuous improvement and quality in relation to ABC as negative. On average the results of continuous improvement and quality in the Grid recorded a mean score = 2.91, this indicated that ABC was not seen as a continuous improvement tool. The scores in Table 6.2 clearly suggest that a

significant amount of central tendency existed, as the means of all components are relatively close.

The interrelatedness between ABC as a continuous improvement tool and other improvement tools needs to be recognised and explored especially in the strong engineering environment such as ESKOM.

#### 6.3.4.1 Table and graph 6.5

Table 6.5 reflects the responses of participants with regard to the questions asked pertaining the administration and application of ABC and ABM in the Grid.

<b>N</b>	<b>Mean</b>	<b>% Agree Total</b>	<b>% Disagree Total</b>	<b>DESCRIPTION</b>
21	3.10	19.05	80.95	ABC as a method is well managed in Eskom Transmission.
21	1.71	90.48	9.52	ABC provides strong direction for the business's budgeting process.
21	2.52	52.38	47.62	ABC is used in Eskom Transmission Southern Grid as a cost reduction method/tool
21	2.67	33.33	66.67	The main cost drivers within the Grid can be identified for cost control.
21	3.76	4.76	95.24	ABM is used as a process and business improvement model in the Grid.
21	1.00	95.24	4.76	ABC can impact business performance in the Grid
21	1.48	80.95	19.05	A strong association exists between the extent to which ABC uses information in normal business operations
21	3.00	9.52	90.48	ABC information is used in investment decisions
21	2.71	42.86	57.14	The main cost drivers within the Grid are well controlled.
	<b>2.44</b>	<b>47.62</b>	<b>52.38</b>	
	<b>N=</b>	<b>10.00</b>		

**Table 6.5 Composite table and graph indicating the perceptions of the participants regarding administration and the application of ABC and ABM in the Grid.**

#### **6.3.4.2 General discussion of the results**

Administration and application of ABC and ABM remain important. In this section the questionnaire, mean values are acceptable but require attention, with the average mean value being 2.44.

#### **6.3.4.3 Detailed discussion of the results**

The research revealed that the following factors were of significant importance in the Grid:

- Though most participants (95.2 percent) agreed that ABC can impact business performance in the Grid;
- a significant contrast was observed on the question whether ABC was well managed in the Grid, with a 80.9 percent disagreement on this question;
- Disconcerting was the level of financial information that was used in making investment decisions. 90.4 percent disagreed that ABC information is used in making investment decisions;
- ABC is well utilised as a budgeting tool for the Grid. 90.4 percent of the participants agreed to the use of ABC for budgeting purposes.

#### **6.3.4.4 Summary of results**

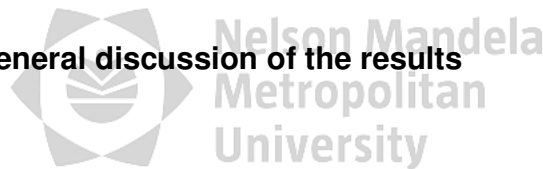
The administration of ABC and ABM remains a vital part of in the success of its utilisation as an effective business tool. ABC administration and application in this regard has an average mean score of 2.44 necessitating improvement.



### 6.3.5.1 Table and graph 6.6

	Mean	% Agree Total	% Disagree Total	DESCRIPTION
21	3.29	38.10	61.90	The value chain is an important aspect in identifying main cost drivers.
21	2.29	71.43	28.57	The value chain plays an important role towards competitive advantage.
21	2.71	28.57	71.43	The value chain ensures activities are performed at a relatively low cost.
21	2.52	57.14	42.86	ABC supplies non-financial information about the company's activities.
21	2.10	90.48	9.52	ABM and the value chain are interrelated.
	<b>2.58</b>	<b>57.14</b>	<b>42.86</b>	
	<b>N=</b>	<b>12.00</b>		

### 6.3.5.2 General discussion of the results



Participants were requested to indicate according to their opinion, the importance of the value chain on in relation to ABC and ABM. Perceptions on the value chain and its importance for business had a general negative tendency, with a mean score = 2.58.

### 6.3.5.3 Detailed discussion of the results

The research revealed that the following factors were of significant importance in the Grid:

- Participants agreed (61.9 percent) that the value chain is an important aspect in identifying main cost drivers;
- a significant difference in perception of the interrelatedness of ABM and the value chain exists, with 90.4 percent disagreeing on this question and only 9.5 percent in agreement;

#### **6.3.5.4 Summary of results**

The importance of the value chain in relation to ABC and ABM provides significant benefit to an organisation. The results indicated that the Grid is aware of such benefits, however the application and implementation of this concept in conjunction with ABC and ABM is lacking. A mean score of 2.58 is a clear indication of the need of improvement in this area.

#### **6.4 CONCLUSION**

The results for this study reflect Garrison and Noreen's (2000: 25) statement that the active support of top management is the most crucial factor in the success of ABC and ABM. Furthermore Gurses (1999: 9) confirms that companies where accountants retain ownership and are unsuccessful in sharing the system (ABC and ABM) with non-accountants struggled with getting benefit from ABC and ABM.

According to Turney (1991: 184) the findings confirmed that the system can be effectively utilised for budgeting purposes within the organisation by using ABC to help estimate work load and resource requirements.

It is evident from the study that participants realise the importance ABC plays in cost reduction. The same could not be said about continuous improvement as ABC and ABM was deemed by most as to be not contributing towards continuous improvement. Literature firmly relates the two concepts as Gupta and Baxendale (2008: 7) state that reducing cost the ABC way, almost always improves quality. ABM fits well with any quality improvement. This is confirmed

by Glad and Becker (1994: 136) stating that through the implementation of quality management programmes with costing systems, not only identify wastage but also to develop methods to value and eradicate it.

The focus now shifts to a qualitative analysis. A qualitative view is deemed necessary to strike the balance for drawing parallel between the two research methodologies.

## **6.5 ANALYSIS OF QUALITATIVE DATA**

The researcher now turns the focus of this study to the qualitative analysis and the interpretation of information gathered for this purpose.

### **6.5.1 Interpretation of qualitative data**

Qualitative research can isolate target populations, show the immediate effects of certain programs on such groups, and isolate the constraints that operate against policy changes in such settings (Denzin and Lincoln, 1998: 226).

There is no single interpretative truth. Interpretations are narrative, or storied, accounts. Interpretation-as-storytelling may privilege any of a number of different narrative positions. Separate interpretive styles are associated with these traditions, including the theoretical form of the text (substantive, formal, critical) and its narrative structure (Denzin and Lincoln, 1998: 227).

Leedy and Ormrod (2005: 97) state that qualitative researchers construct interpretive narrative from their data and try to capture the complexity of the phenomenon under study. They use a more personal, literary style, and they often include the participant's own language and perspectives.

### **6.5.2 Analysing the data for semi-structured interviews**

In recent times, the tradition of interviewing has been twofold. Interviewing found greater popularity and widespread use in clinical diagnosis and counselling, where the concern was on the quality of the response, and later interviewing came to be widely employed with emphasis on measurement (Denzin and Lincoln, 1998: 49).

Denzin and Lincoln (1998: 53) further state that structured interviewing refers to a situation in which an interviewer asks each respondent a series of pre-established questions with a limited set of response categories. There is generally little room for variation in response except where an infrequent open-ended question may be used.

The researcher will now provide the qualitative data analysis of semi-structured interviews and focus group interviews conducted for this study.

### **6.5.3 Feedback from semi-structured and focus group interviews**

According to the results yielded for the focus group discussions, it was evident that although ABC is used within the Grid as accounting tool, very few participants really knew the basics of the concept.

To question 1: To what extent can ABC/M be utilised as a decision making model for business? Participants responded:

*We acknowledge the concept of ABC; however I strongly feel that this is an accounting concept and should not be the responsibility of engineers to drive. ABC is used very well for our budgeting process and should be kept that way. I can't see how ABC could assist with plant decisions as plant decisions are based on engineering and historical facts (Engineer).*

In the focus group interviews conducted, it was asked why sound financial behaviour should be paramount in business.

*Participants unanimously concurred that it is of high importance as this gives organisations a good basis to work from as discipline is installed. They were also of the opinion that in modern business this becomes an ethical aspect with people working in the organisation*

To question 2 : Have costing models evolved and why new costing models should be explored, participants responded:

*Yes, costing models were designed to talk to financial officers where information assisted financial direction. ABC is a new model and now can assist operations with information to help make other operational and investment decisions (Finance – staff).*

*Yes, old cost accounting did not make much of overhead cost. Modern businesses expense highly in this area. ABC being a newer model speaks to this aspect (Engineer).*

The question of whether ABC/M can be utilised as a cost reduction and decision making model for business, yielded mixed responses:

*No, ABC/M is a budgeting tool and I cannot see how we can save cost through utilising this model. Reports are given on activities that already happened. I don't see how ABC can influence cost reduction (Engineer- Secondary plant).*

*ABC/M can definitely assist in cost reduction as the activities can be analysed and main cost drivers can be identified and thus better control measure put in place. Though this is reactive, future planning can thus save us cost as the same mistakes will not be made again (Finance officer – Finance).*

To question 3: Staying within budget is one of the budgetary concerns in Eskom Transmission. How did ABC assist the Grid in staying within budget? A manager responded:

*Adhering strictly to budgetary targets was not met completely. Though ABC assisted management and staff knowing and accounting for cost, a certain measure of overspending was still being realised (Manager – Finance).*

It was the researcher's observation that though it was acknowledged by the participants that ABC/M can be utilised as a decision making tool for any business, it was not done in the Grid. Finance staff recognised such benefits; however engineers still believed that technical decisions required technical know-how and little financial input besides that of procuring and paying for equipment and spares (i.e. financial related outputs).

It was evident that decisions were mostly made on historical information rather than current trends and available financial information. Thus in the question asked as to what extent can ABC/M be utilised as a decision making model for business, participants responded:

*It can assist with business process/operational decisions as well. The information provided can assist management not only for financial decisions pertaining to cost, but can assist with business process decisions as well (Finance staff).*

Finance staff and managers were asked whether departmental heads exercise confidence in financial information derived from ABC for business decisions and how ABC/M assists business with improved forward planning. Participants responded:

*Departmental heads see costing as a financial department output to a large extent as a financial department output, hence reliance on such information to make operational decisions in respective departments is taken with reluctance (Finance staff).*

Concerning the question if attention towards better maintenance and improved performance is essential and has Eskom transmission improved on maintenance performance in the past 3 years and can it be attributed to ABC/M, participants responded:

*Yes, it has improved, however it cannot be attributed to ABC/M as most improvement came from improved discipline rather than improved processes and systems (Engineer).*

*Yes, much emphasis was place on training and thus multi-skilling employees. Though this made a steady contribution towards maintenance performance in the grid, constraints of the network together with slicker and improved process remains a challenge (Manager - Engineering).*

On the question as to whether cost information is used in making a wide range of operational decisions. It was remarked that:

*Departmental heads see costing as a financial department output to a large extent as a financial department output, hence reliance on such information to make operational decisions in respective departments is taken with reluctance (Manager Engineering).*

*ABC is used for analysis of cost and assists management with forward planning. ABC is used for the budgeting process in the Grid mostly. ABC cannot be mixed up with engineering pertaining planning for maintenance and operations (Engineer).*

Finance staff seemed more knowledgeable and hands on in terms of the concept of ABC than engineers. The question was then posed whether ABC is seen as a continuous improvement tool in the organisation. Most respondents emphatically disagreed that ABC aids continuous improvement. The question was posed as to whether ABC seen as continuous improvement concept within the Southern Grid yielded the following responses:

*No, engineering is seen as the core business, the link between accounting (ABC) and continuous improvement in engineering terms (SIGMA) has not yet been*



*realised in our Grid. I'm not of the opinion that the two are related in terms of the process of continuous improvement (Engineer).*

To question 6 whether ABC/M can be utilised as a cost reduction and decision making model for business, the participants responded:

*Yes, better allocation of resources in business can lead to improved costing and hence cost reduction in certain activities. Activities are better monitored and controlled and this will assist our Grid business with better costing, hence cost reduction. By controlling the activities, better and informed decisions can be realised as cost driver activities are easily identified and can be better controlled (Finance officer).*



*Yes, we have seen positive results from our last budget review where main cost activities responsible for over expenditure could be identified easily. This led to better planning for the next financial year (Accountant).*

## **6.6 CONCLUSION**

The empirical results of the research were presented in this chapter. Descriptive statistics and reliability analyses were presented to provide further insight.

The management information produced from the research will familiarise all with the challenges and issues facing the Grid and it is encouraging to note that ABC is already in use and requires certain improvements to realise the full benefit from this system.

The researcher will now focus on the summary and recommendations that will be dealt with in chapter 7.



## CHAPTER 7

### DISCUSSION, RECOMMENDATIONS AND CONCLUSIONS

#### 7.1 INTRODUCTION

After presenting the results of the research in the previous chapter, the implications of these results are now discussed in the light of the literature reviewed in the first few chapters of this research. Research limitations are identified and future research areas are also discussed in this chapter.

As indicated in the literature (*page 22*), Turney (1991: 44) posits that the key to success in any business lies in the quality of its information and how this is applied in the organisation. In order to make the right strategic decisions and to remain competitive, management is reliant on accurate, up to date information of activities performed. This treatise emphasises the importance of quality information and will prove that ABC and ABM are useful tools providing management with the information for effective decision-making for improved business performance.

The literature (*page 31*) advocates that the quality of management decisions has been directly linked to the quality of information. Glad and Becker (1994: 219) agree and state further that, as a guide for planning and to choose among alternatives, organisations need information about the financial consequences of intended actions. They especially need reliable cost information, which serves in many planning and decision support roles. An ABC and ABM system can generate this quality information and interrelate superbly with strategic planning to produce products of higher quality cost-effectively and achieve overall customer satisfaction.

The research (*page 33*) indicates that ABC and ABM are quite different from “business as usual” approaches to improvement. It involves analysing activities in the search for waste. It includes looking for and eliminating the negative effects of cost drivers and it involves measuring what matters to the customer in order to focus on improvement efforts. ABC and ABM integrates all the improvement efforts into one package. It ensures that the benefits apply to the overall company and that the results go straight to the bottom line (Turney, 1991: 311).

Extent of ABC use is not directly associated with plant profitability, rather the relationship is through operational performance measures quality improvement and cost improvement that act as intervening variables between extent of ABC use and profitability. Hence, this study contributes to the literature by heightening our understanding of how ABC improves quality, cost and improve plant performance and profitability. The importance of improving quality while improving cost also becomes critical to managers interested in retaining customers and enticing them to buy goods or services. Thus, this study provides strong evidence to suggest that ABC implementation efforts by managers generate an increased tendency toward improved financial business performance through effective decision making on both financial and operational performance levels. These competencies were discussed in Chapter 4 (*page 60*).

## **7.2 SUMMARY**

Chapter 1 highlighted the purpose of the study and its importance to the workplace and contribution to the body of knowledge.

In Chapter 2, background on Eskom in general, the organisation that formed the focus of this study, was supplied. The importance of ESKOM as a power utility in

South Africa was discussed, followed by a discussion on the divisions within ESKOM. The chapter continued with a discussion in the importance of a sound transmission network and concluded with the quality of supply in the Transmission network.

Chapter 3 focused on costing and its importance in modern business. The chapter introduced the reader to the concept of costing. This was followed with background on traditional cost accounting methods, a comparison of traditional costing versus activity based costing and cost management in modern business. Various other core business aspects such as the value chain, continuous improvement and quality management were discussed in detail. The chapter was concluded with the benefits of improved costing in business.

Chapter 4 outlined the definition of ABC and highlighted the fundamentals and principles of ABC, the principles of ABC as used in business, maintenance costing as an ABC approach and aspects regarding the theory of constraint and integrating TOC with ABC.

In chapter 5 a discussion on the research methodology of the study was supplied. Other aspects such as the research design, research methodology utilised, sampling and measuring characteristics of the research instruments were also outlined.

In chapter 6 the quantitative data were analysed and ranked according to frequencies and percentages of items. Qualitative data were analysed and interpreted.

The researcher will now follow this up with the main findings of the study.

### 7.3 FINDINGS

Research findings and conclusions will be discussed around the proposed ABC and ABM model. The interview results suggest that certain aspects are not followed by Eskom Transmission as indicated in the ABC and ABM model which is critical in trying to achieve increased business performance.

Active management support for ABM as a concept is lacking and is crucial for the successful implementation and process. Apart from providing the resources and means for implementation, management should play an active role to support staff and encourage continuous improvement if ABC and ABM is to succeed. Currently Transmission Southern grid does not have the entire management and staff buy-in on the concept of ABC. Though it is being used, the extent of its power and use is still unknown.

Although ABC is a well known concept with most respondents in the Grid, basic knowledge on ABM seriously lacks. The relation is logically identified in the questionnaires, however upon closer interviews, it was found that understanding of this concept lacked.

Ownership of the accounting tool ABC and ABM is seen as being retained by the accountant. An essential contribution towards business success would be to have involvement from all departments as to ensure effective buy-in and ownership by all.

The impact of the value chain is not fully realised as management and staff are employing the value chain fully as a cost reduction tool towards the quest for competitive advantage. Eskom is traditionally seen a monopolistic company with

no direct competitors, however indirect competitors are seizing opportunities left by not enhancing its existing competitive advantage.

As business improvement concepts, ABC interrelates and uses various other tools to help the organisation achieve their goals. The lack of knowledge of these tools was evident in the research study as concepts such as TQM, TOC and the impact of the value chain on ABC lacked respondent input.

ESKOM Southern Grid in the study has implemented ABC for more than three years however, the exact length of implementation to assess the time lag effects of the extent of ABC use is unknown.



#### **7.4 RECOMMENDATIONS AND MOTIVATION OF THE RESEARCH**

##### *Recommendation 1*

Management should have the organisations goal and objectives in mind that is locked up in the mission and vision of the company. Business today is dynamic and change is constantly needed to keep abreast with competitors. Concepts such as ABC and ABM need to be embraced and driven by management.

##### *Motivation 1*

It is imperative for management to lead from the front as staff will take the cue from them. Broad endorsement is needed to be able to place ABC and ABM at

the top of anyone's agenda, this is needed to remove barriers of acceptance and obtain full commitment.

### *Recommendation 2*

Dissemination of financial performance to all staff is needed as an awareness drive of how the business is performing. Key focus areas need to be highlighted.

### *Motivation 2*

A sense of transparency on financial performance and how it can impact operations will create a good platform amongst all staff for ownership of the ABC and ABM system. ABC and ABM cannot be seen in isolation, indicating that it is not a finance department priority only. Collectively through ownership this improvement tool can work effectively.

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### *Recommendation 3*

Training (for managers, finance staff and engineers) is required for proper execution of the ABC system. The objective is to obtain high levels of "buy-in". Different types of training pertaining to ABC fundamentals and ABM needs to be established and undertaken.

### *Motivation 3*

Implementers need skills and know-how of the ABC and ABM system as to ensure proper utilisation. Users should understand what information is available



from ABC and how that information should be used in decision making. The objective would be to train them to use ABC in a program of ABM.

#### *Recommendation 4*

ABC and ABM should be applied to ensure main cost drivers and priority activities are identified. ABC and ABM ensure that the main cost drivers are highlighted and thus full attention can be given to it.

#### *Motivation 4*

It is imperative that the right activities be identified and efforts channeled into these important activities. Ensuring the business's operational activities are clear as per the value chain, enables the Grid to make strategic operational decisions. The use of ABC is an aid in strategic decision making and cost reduction as the allocation of resources can be efficiently allocated through key activity identification.

#### *Recommendation 5*

Continuous training on concepts that have a direct impact on the benefits that could be derived from ABC is important to realise. TOC and TQM needs to be used as continuous improvement concepts in conjunction with ABC and ABM towards effective decision making and improved business financial performance.

### *Motivation 5*

Thus improving on quality as an example, ABC, ABM and quality management go hand-in-hand in any improvement program.

### *Recommendation 6*

Tools such as TOC and TQM from the proposed model would assist the Grid in identifying the bottlenecks of a system correctly, thus know explicitly the amount of slack capacity of each activity available during a specific time period. Knowing the excess capacity that will be available during a specific period ahead of time will help managers to decide whether they can employ this capacity to other core activities during that period, and therefore will help to improve business performance (operational and financial performance). Without ABC, managers will not have accurate information regarding the critical bottlenecks.

### *Motivation 6*

All Grids experience bottlenecks in the performing maintenance and operating key equipment. Knowing how to identify bottlenecks and dealing with it promptly and accurately enables the Grid to have cost reductions as ABC information assists management to attach monetary value to the cost of these bottlenecks.

The results confirmed that there exists a lack of value chain integration into ABC systems to ascertain the customer's needs and to obtain the true process activities. Respondent's feedback was scored relatively low on the question and indicated that the concept was not understood and implemented.

The results also confirmed the findings of Gurses (1999:9) that companies which have not had a good ABC and ABM experience was due to accountants retaining ownership and unsuccessful sharing with non-accountants, whereas the two should be seen as joint owners of the system.

Most departments viewed ABC and ABM as a finance tool and of no help to an engineering department. ABC information was thus not utilised for decision making since no real reliance is placed on such information for engineering and related operational decision making.

It can be assumed that the improvements on quality serve as a base for cost improvements because processes become more stable and reliable, and less time and cost are required for rework.



## **7.5 LIMITATIONS OF THE STUDY**

The findings of this study should be viewed with certain limitations in mind. These limitations however, present opportunities for future research studies.

Firstly, a possible limitation of this study was the sensitivity of respondents to disseminate information about the company, as Eskom's image in the public eye remains a challenging issue.

Secondly, the scope of the study is limited by the sample size, which included only Eskom Transmission Southern Grid staff. This may reveal only a small

portion of the Eskom Transmission findings. The findings of this study may have been different if a broader range of Transmission staff had been selected.

Thirdly, the level of ABC knowledge was average though the Grid was employing this tool for more than three years. In some cases an explanation of what ABM was needed to communicate what the questionnaires meant.

## **7.6 OPPORTUNITIES FOR FURTHER RESEARCH**

This research is not a full representation of Eskom Transmission in general as only the Southern Grid was concentrated on. It is thus expected that the results pertaining to key ABC and ABM opinions might differ on a broader study undertaking all regional Eskom Transmission offices.

Research could be carried out to other divisions within Eskom and results compared to the results obtained in Transmission. A study can then be conducted to ascertain whether ABC and ABM benefit are fully being realised and to continue with its use as a continuous improvement tool. The current study can also be broadened for the whole of Eskom Transmission to establish whether if consistency in the findings from one Grid was found in others Grids throughout South Africa.

In summary, the challenge for further research is to provide insights that are relevant and useful for practitioners to allow management accounting research to have more of an impact on practice.

## 7.7 CONCLUDING REMARKS

It has been postulated throughout that the success of this study is dependant on management's support , the quality of information and how this information will be applied through the use of ABC and ABM. The literature thus correlates with the results of this study indicated in the proposed model (*page 62*).

The results indicate that ownership by all parties and departments lacks within the Grid. ABC is seen as purely a finance related tool hence little or no involvement by core departments such as engineering is evident. Departments working together towards continuous improvement would be a step in the right direction for the Grid.

It is evident from this research that in order for management to achieve greater returns from their investment in ABC, they must also use ABC to improve both internal quality drivers and cycle time while using fewer resources to achieve both of these objectives. Thus, if managers believe that their organisation's strategic emphasis must be either on quality or cost improvement, but not both, then they may behave sub optimally. In addition managers who believe that using ABC to drive new quality enhancement initiatives, can result in both revenue expansion and cost reduction for the Grid.

The results are of particular interest to accountants and finance managers because they are the primary proponents and designers of ABC systems. The results are also of particular interest to both operational managers and engineers who are interested in preserving their quality image in order to influence operational activities, while controlling departmental costs at the same time. Thus, the results of this study should enhance the management's of Eskom's confidence in operational and financial performance with aid of ABC and ABM.

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## ADDENDUM A

### FORMAL PERMISSION FROM THE GRID MANAGER OF ESKOM TRANSMISSION SOUTHERN GRID



## ADDENDUM B

### QUESTIONNAIRE/ VRAELYS



## ADDENDUM C

### SEMI STRUCTURED INTERVIEW



## ADDENDUM D

### FOCUS GROUP INTERVIEWS

