

**The effect of current activity-based costing (ABC) implementation in
Eskom's finance field**

by

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Field study

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DECLARATION

I declare that the field study hereby submitted for the Magister in Business Administration at the UFS Business School, University of the Free State, is my own independent work and that I have not previously submitted this work, either as a whole or in part, for a qualification at another university or at another faculty at this University.

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SUMMARY

The main objective of this research study was to identify the factors that have a direct influence on the successful implementation of activity-based Costing (ABC) within the Eskom finance division.

The secondary objectives are:

- to determine whether ABC will be successfully implemented;
- to determine the benefits of ABC; and
- to determine the effect of external factors on the successful implementation of ABC.

Aim:

To achieve the above stated objectives, questionnaires and focus group interviews were performed within Eskom.

Method:

The selected employees were asked to respond to the questionnaire on their experience and their perceptions on the current implementation of ABC within Eskom Distribution Free State Grid.

Findings:

The findings indicated that there was not sufficient guidance from top management with regards to the implementation of ABC within Eskom Distribution Free State Grid.

Conclusion:

More clear and concise top-down communication as well as intense user specific training manuals, current system enhancements and more clear inter and intra communication between departments are necessary.

Keywords:

Activity Based Costing, Fundamentals of ABC, Implementing ABC, Benefits of ABC, Limitations involving ABC, Environmental effect of ABC.

OPSOMMING

Die hoofdoel van hierdie navorsingstudie was om die faktore te bepaal wat 'n direkte invloed het op die suksesvolle implementering van Aktiwiteitsgebaseerde Kosteberekening (AGK) in die finansies afdeling van Eskom.

Die sekondêre doelwitte is:

- om te bepaal of AGK suksesvol ge-implementeer kan word;
- om die voordele van AGK te bepaal; en
- om die effek van eksterne faktore te bepaal op die suksesvolle implementering van AGK. .

Doel:

Om die gestelde bogenoemde doelwitte te bereik, is vraelyste en fokusgroep onderhoude by Eskom uitgevoer.

Metode:

Die geselekteerde werknemers is gevra om die vraelys in te vul rakende hulle ervaringe en sienings oor die huidige implementering van AGK by Eskom Verspreiding, Vrystaat netwerk.

Bevindinge:

Die bevindinge het aangedui dat daar nie voldoende leiding deur hoofbestuur is rakende die implementering van AGK by Eskom Verspreiding, Vrystaat netwerk.

Gevolgtrekking:

Duideliker en beknopte kommunikasie van bo na onder sowel as intensiewe gebruikerspesifieke opleidingshandleidings, huidige stelselverbeteringe en duideliker inter- en intrakommunikasie is tussen departemente nodig.

Sleutelwoorde:

Aktiwiteitgebaseerde kosteberekening, Beginsels van AGK, Implementering van AGK, Beperkinge van AGK, Omgewingseffek van AGK

CHAPTER 1

INTRODUCTION

1.1 Introduction

The term, activity-based costing (ABC), is a somewhat recent innovation in the ever-changing world of management accounting. ABC was developed by Kaplan and Cooper (1998) of the Harvard Business School in an attempt to accurately allocate indirect overhead costs associated with each product or service within an organisation.

ABC is a method used to cost and monitor activities which traces resource consumption and overall costing of all final outputs. Resources are aligned to activities, and activities to cost objects based on the consumption estimates. In simple English, ABC uses cost drivers to attach activity costs to outputs. (CIMA, 2014:online). ABC is, therefore, intended to accurately provide management with information relating to activities that involve product costs and serves as a decision-making tool (Cagwin & Bouwman, 2002; Cheng, 2013; Harrison & Killough, 2006; Kee, 2003). In comparison, traditional costing (TC) systems consider the allocation of overheads on the basis of volume output and do not consider supporting activities relating to a specific product or service (Gunasekeran & Singh, 1999; Lind, 2001). Gunasakeran and Singh (1999) argued that this may result in the over-allocation of overheads to high-volume products and under-allocation of overheads to low volume products and as a result product costs become distorted.

In contrast to traditional cost-accounting systems, ABC systems first accumulate overhead costs for each organisational activity, and then assign the costs of the activities to the products, services, or customers (cost objects) causing that activity. The most critical aspect of ABC is activity analysis. Activity analysis is the processes of identifying appropriate output measures of activities and resources (cost drivers) and their effects on the costs of making a product or providing a service. Significantly, as discussed in the next section, activity analysis provides

the foundation to remedy the distortions inherent in traditional cost-accounting systems.

Activity-Based Costing (ABC), in general, does not appear to have been as readily accepted within South Africa's public sector as within the private industry (Garrison & Noreen, 2012). For South African managers to accomplish their visions and missions at the current resource levels in general become unattainable, as efficiencies and savings are often translated into self-inflicted budget and manpower cuts. It can be universally accepted that the benefits of using ABC are real and obtainable, but not yet worth the effort required with the perceived risk being taken (Seon-Mook Lee & Ryder, 2011:22).

Traditional wisdom currently being used by managers is to wait and see what benefits and consequences come to those who pioneer ABC. ABC training should not be perceived as individual, but as an overall organisational need. Operations were identified as the area most suitable for ABC, and maintenance units the least suitable. Overall, ABC is generally considered a meaningful tool that can be used to help leadership manage their operations and resources better (Seon-Mook Lee 2011:112).

The quality of costing information has been directly linked to the conditions analysis of management decisions (Seon-Mook Lee & Ryder, 2011:46). Within the literature review, the added benefits of using the ABC method is demonstrated against the other conventional costing methods used in the Eskom Free State Distribution Grid in Bloemfontein.

The following benefits of ABC have been identified by Brimson (1991:239):

- Contributing insight into the fastest-growing and least visible element of cost-overhead.
- Combining the corporate strategy to operational decision making.
- Supporting continuous improvement and total quality control.
- Promoting the elimination of waste by providing exposure of non-value added activities.

- Remodelling profitability by monitoring total life-cycle cost and performance.
- Correcting the effectiveness of budgeting by identifying the cost/performance relationship of different service levels.
- Enhancing make/buy decisions, and estimating and pricing decisions that are based on product cost that mirrors the manufacturing process.

To realise Eskom's vision, leadership has to rely on management and staff to use costing knowledge to correct problem areas, turning those areas into opportunities and thereby executing strategic objectives (Eskom, 2013b).

The results of the literature review in entirety could help convince the leadership within the Eskom Free State Distribution Grid in Bloemfontein to practice a much more rigorous business improvement strategy using the ABC method.

Eskom Holdings SOC Limited is a monopoly power utility that provides an essential service to the South African economy. It produces up to 95% of electricity in South Africa. The company is a State-Owned Company (SOC) that is wholly owned by the South African government (Eskom, 2013b).

The statement of the research problem, the aim of the study and methodology are discussed, after which the demarcation and ethical considerations of the study are presented. Lastly, the needed terminology is introduced and the study ends with concluding remarks.

1.2 Problem statement

Significant changes were experienced in both management accounting research and practice since the year 2000. According to Scapens management accounting, researchers and management accounting practitioners are about to experience changing times (Scapens, 2012:329).

It can be argued that for ABC to be successful people who have a strong understanding of the operations within a specific entity and its various multi-functional departments should be involved (Sharman, 2011:32).

The key to ABC success is in distinguishing the difference between value-added costs and non-value-added costs. A value-added cost is the cost of an activity that cannot be eliminated without affecting a product's value to the customer. In contrast, a non-value-added cost is the cost of an activity that can be eliminated without diminishing value. Some value-added costs are always necessary, as long as the activity that drives such costs is performed efficiently. However, non-value-added costs should always be minimized because they are assumed to be unnecessary (Jiambalvo, 2013).

However, over time, ABC appears to have received more conceptual support in literature than any other costing method.

Currently, Eskom is not using the ABC method of costing, therefore the value of any project in Eskom's books would not be the 'true' rand value, as all costs relevant to the project – being it variable or fixed – were not allocated to the specific work breakdown structure in totality.

Eskom has been labelled as a spendthrift organisation which wastes taxpayers' money on huge bonuses (Fin24, 2011).

If Eskom would use the ABC method, a more realistic project rand value amount can be determined, enabling Eskom to accurately predict future projects, thereby not being portrayed in the media as an overspender. They could, thus, win back their public image to all South Africans.

1.3 Aim of the study

The main objective of this research study was to identify the factors that have a direct influence on the successful implementation of ABC within the Eskom finance division.

The secondary objectives are:

- to determine whether ABC will be successfully implemented;
- to determine the benefits of ABC; and
- to determine the effect of external factors on the successful implementation of ABC.

1.4 Research methodology

A qualitative research method was employed in this study. The research design, sample and data analysis are discussed next.

1.4.1 Research design

A **qualitative approach and quantitative approach** to data collection and analysis was used. According to Sekaran and Bougie (2013:336), qualitative research is a scientific research method that consists of an investigation that:

- seeks answers to questions;
- systematically uses a predefined set of procedures to answer the question;
- collects evidence;
- produces findings that were not determined in advance; and
- produces findings that are applicable beyond the immediate boundaries of the study.

Additionally, it seeks to understand a given research problem or topic from the perspectives of the local population it involves. Qualitative research is especially effective in obtaining culturally specific information about the values, opinions, behaviours, and social contexts of particular populations (Sekaran & Bougie, 2013:336).

Quantitative research deals in numbers, logic and the objective, focusing on logic, numbers, and unchanging static data and detailed, convergent reasoning rather than divergent reasoning. The main characteristics are:

1. The data is usually gathered using more structured research instruments
2. The results are based on larger sample sizes that are representative of the population
3. The research study can usually be replicated or repeated, given its high reliability
4. Researcher has a clearly defined research question to which objective answers are sought
5. All aspects of the study are carefully designed before data is collected
6. Data is in the form of numbers and statistics

7. Researcher uses tools, such as questionnaires or equipment to collect numerical data

The aim of a quantitative research study is to classify features, count them, and construct statistical models in an attempt to explain what is observed.

Epistemological orientation: For the purpose of this study an **interpretivism** approach was used.

The data collected in the study for quantitative purposes consists of ***semi-structured questionnaires*** and for qualitative purposes ***interviews*** with individual engineers and senior executives within the Eskom Free State Distribution Grid in Bloemfontein were conducted. This data gathering method was used to collect information about the use of the ABC method within the Eskom Free State Grid. A qualitative research design of exploratory nature was suggested, facilitated by semi-structured interviews. Interpretive studies assume that people create and associate their own subjective and intersubjective meanings as they interact with the world around them. Interpretive researchers thus attempt to understand phenomena through accessing the meanings participants assign to them (Orlikowski & Baroudi, 1991).

Interpretive methods of research start from the position that our knowledge of reality, including the domain of human action, is a social construction by human actors and that this applies equally to researchers. Thus, there is no objective reality which can be discovered by researchers and replicated by others, in contrast to the assumptions of positivist science (Walsham, 1993).

1.4.2 Sample

A non-probability sampling method was used.

Non-probability sampling was selected as the sample is deliberately engineered to resemble the demographics of the population from which it is drawn. The researchers select a sample that suits their needs (often used in qualitative research where generalisation to a larger population is not required, and also frequently employs a 'snowballing' technique) (Sekaran & Bougie, 2013).

The sample population consisted of 22 top managers, 10 engineers and 12 finance staff. A sample size of 25 was used in proportion to the total population.

The selected sample included all financial and engineering managers who are able to make changes to the current system.

1.4.3 Data analysis

Data on the project was analysed, as the analysis forces the researcher to see the contextual framework being measured.

A huge portion of the investigation focused on human intelligence and therefore human error constitutes an important part of the investigation.

1.5 Demarcation of the study

The study was conducted within the finance (planning) field at Eskom.

The study combines the fields of finance, project accounting, capital accounting and engineering within Eskom. As this study focuses on the accounting methods used at Eskom, it includes all three departments. The study's purpose was to establish the beneficial impact of implementing the ABC method within Eskom Distribution Free State Grid.

1.6 Ethical considerations

Cooper and Schindler (2006:285) stated that ethics are the norms and standards of behaviour that guides our moral choice about our behaviour and relationships with others. The following ethical considerations apply to this study:

- **Objectivity:**

The researcher aimed to avoid any instances of bias when data was analysed, interpreted and when statistical programme analysis was done.

- **Informed consent:**

The selected participants were informed as to the purpose, processes and benefits that the study entails as well as a compulsory consent form that needed to be signed before any interview took place.

- **Data integrity:**

The ethical protection of all Eskom's data participants was ensured beyond the data collection phase of the project by means of a data management system.

- **Confidentiality and respect:**

The confidentiality of all participants' responses was ensured as well as their autonomy thereof.

- **Voluntary participation:**

All participation with regards to the above research was done on a voluntary basis. Measures were taken to ensure that no participant was misled by the reason for the research

1.7 Definitions

The following key aspects within this review are defined (CIMA, 2013:online):

ABC model

A representation of resource costs during a time that are consumed through activities and traced to products, services, and customers, or to any other object that creates a demand for the activity to be performed.

ABC system

A system that maintains financial and operating data on an organisation's resources, activities, drivers, objects and measures. ABC models are created and maintained within this system.

Activity

Work performed by people, equipment, technologies or facilities. Activities are usually described by the 'action-verb-adjective-noun'" grammar convention. Activities may occur in a linked sequence and activity-to-activity assignments may exist.

Activity analysis

The process of identifying and cataloguing activities for detailed understanding and documentation of their characteristics. An activity analysis is accomplished by

means of interviews, group sessions, questionnaires, observations, and reviews of physical records of work.

Activity-based budgeting (ABB)

An approach to budgeting where a company uses an understanding of its activities and driver relationships to quantitatively estimate workload and resource requirements as part of an on-going business plan. Budgets show the types, number of, and cost of resources that activities are expected to consume based on forecasted workloads. The budget is part of an organisation's activity-based planning process and can be used in evaluating its success in setting and pursuing strategic goals. (See Activity-based planning.)

Activity-based costing (ABC)

A methodology that measures the cost and performance of cost objects, activities and resources. Cost objects consume activities and activities consume resources. Resource costs are assigned to activities based on their use of those resources, and activity costs are reassigned to cost objects (outputs) based on the cost objects' proportional use of those activities. Activity-based costing incorporates causal relationships between cost objects and activities and between activities and resources.

Activity-based management (ABM)

A discipline focusing on the management of activities within business processes as the route to continuously improve both the value received by customers and the profit earned in providing that value. ABM uses activity-based cost information and performance measurements to influence management action. (See activity-based costing.)

Activity-based planning (ABP)

An on-going process to determine activity and resource requirements (both financial and operational) based on the on-going demand of products or services by specific customer needs. Resource requirements are compared to resources available and capacity issues are identified and managed. Activity-based budgeting (ABB) is based on the outputs of activity-based planning.

Activity driver

The best single quantitative measure of the frequency and intensity of the demands placed on an activity by cost objects or other activities. It is used to assign activity costs to cost objects or to other activities.

Activity level

A description of how elastic or sensitive an activity is to changes in the volume, diversity, or complexity of a cost object or another activity. Product-related activity levels may include unit, batch, and product levels. Customer-related activity levels may include customer, market, channel, and project levels.

Allocation

A distribution of costs using calculations that may be unrelated to physical observations or direct or repeatable cause-and-effect relationships. Because of the arbitrary nature of allocations, costs based on cost causal assignment are viewed as more relevant for management decision-making.

Assignment

A distribution of costs using causal relationships. Because cost causal relationships are viewed as more relevant for management decision-making, assignment of costs is generally preferable to allocation techniques.

Attributes

A label used to provide additional classification or information about a resource, activity, or cost object. Used for focusing attention and may be subjective.

Best practices

A methodology that identifies the measurement or performance by which other similar items will be judged. This methodology is used to establish performance standards and to aid in identifying opportunities to increase effectiveness and efficiency. Best practices methodology may be applied with respect to resources, activities, cost object, or processes.

Bill of activities

A listing of activities required by a product, service, process output or other cost object. Bill of activity attributes could include volume and or cost of each activity in the listing.

Bill of resources

A listing of resources required by an activity. Resource attributes could include cost and volumes.

Capacity

The physical facilities, personnel and process available to meet the product or service needs of customers. Capacity generally refers to the maximum output or producing ability of a machine, a person, a process, a factory, a product, or a service.

Capacity management

The domain of cost management that is grounded in the concept that capacity should be understood, defined, and measured for each level in the organisation to include market segments, products, processes, activities, and resources. In each of these applications, capacity is defined in a hierarchy of idle, non-productive, and productive views.

Constraint

A bottleneck, obstacle or planned control that limits throughput or the utilisation of capacity.

Cost centre

A sub-unit in an organisation that is responsible for costs.

Cost driver

Any situation or event that causes a change in the consumption of a resource, or influences quality or cycle time. An activity may have multiple cost drivers. Cost

drivers do not necessarily need to be quantified; however, they strongly influence the selection and magnitude of resource drivers and activity drivers.

Cost driver analysis

The examination, quantification, and explanation of the effects of cost drivers. The results are often used for continuous improvement programmes to reduce throughput times, improve quality, and reduce cost.

Cost element

The lowest level component of a resource, activity, or cost object.

Cost management

The management and control of activities and drivers to calculate accurate product and service costs, improve business processes, eliminate waste, influence cost drivers, and plan operations. The resulting information will have utility in setting and evaluating an organisation's strategies.

Cost object

Any product, service, customer, contract, project, process or other work unit for which a separate cost measurement is desired.

Cost object driver

The best single quantitative measure of the frequency and intensity of demands placed on a cost object by other cost objects.

Cost pool

A logical grouping of resources or activities aggregated to simplify the assignment of resources to activities or activities to cost objects. Elements within a group may be aggregated or disaggregated depending on the informational and accuracy requirements of the use of the data. A modifier may be appended to further describe the group of costs, i.e. activity cost pool.

Cross-subsidy

The inequitable assignment of costs to cost objects, which leads to over costing or under costing them relative to the amount of activities and resources actually

consumed. This may result in poor management decisions that are inconsistent with the economic goals of the organisation.

Direct cost

A cost that can be directly traced to a cost object since a direct or repeatable cause-and-effect relationship exists. A direct cost uses a direct assignment or cost causal relationship to transfer costs.

Hierarchy of cost assignability

An approach to group activity costs at the level of an organisation where they are incurred, or can be directly related to. Examples are the level where individual units are identified (unit-level), where batches of units are organised or processed (batch-level), where a process is operated or supported (process-level), or where costs cannot be objectively assigned to lower level activities or processes (facility-level). This approach is used to better understand the nature of the costs, including the level in the organisation at which they are incurred, the level to which they can be initially assigned (attached) and the degree to which they are assignable to other activity and/or cost object levels, i.e. activity or cost object cost, or sustaining costs.

Indirect cost

A resource or activity cost that cannot be directly traced to a final cost object since any direct or repeatable cause-and-effect relationship exists. An indirect cost uses an assignment or allocation to transfer cost.

Life cycle cost

A product's life cycle is the period that starts with the initial product conceptualisation and ends with the withdrawal of the product from the marketplace and final disposition. A product life cycle is characterised by certain defined stages, including research, development, introduction, maturity, decline, and abandonment. Life cycle cost is the accumulated costs incurred by a product during these stages.

Performance measures

Indicators of the work performed and the results achieved in an activity, process, or organisational unit. Performance measures are both non-financial and financial. Performance measures enable periodic comparisons and benchmarking.

Process

A series of time-based activities that are linked to complete a specific output.

Profitability analysis

The analysis of profit derived from cost objects with the view to improve or optimise profitability. Multiple views may be analysed, such as market segment, customer, distribution channel, product families, products, technologies, platforms, regions, manufacturing capacity, etc.

Resource driver

The best single quantitative measure of the frequency and intensity of demands placed on a resource by other resources, activities, or cost objects. It is used to assign resource costs to activities, and cost objects, or to other resources.

Resources

Economic elements applied or used in the performance of activities or to directly support cost objects. They include people, materials, supplies, equipment, technologies and facilities.

Target costing

A target cost is calculated by subtracting a desired profit margin from an estimated or a market-based price to arrive at a desired production, engineering, or marketing cost. This may not be the initial production cost, but one expected to be achieved during the mature production stage. Target costing is a method used in the analysis of product design that involves estimating a target cost and then designing the product/service to meet that cost.

Tasks

The breakdown of the work in an activity into smaller elements.

Tracing

The practice of relating resources, activities and cost objects using the drivers underlying their cost casual relationships. The purpose of tracing is to observe and understand how costs escalate in the normal course of business operations.

Unit cost

The cost associated with a single unit of measure underlying a resource, activity, product or service. It is calculated by dividing the total cost by the measured volume. Unit cost measurement must be used with caution as it may not always be practical or relevant in all aspects of cost management.

Value analysis

A method to determine how features of a product or service relate to cost, functionality, appeal and utility to a customer (i.e., engineering value analysis).

Value chain analysis

A method to identify all the elements in the linkage of activities a firm relies on to secure the necessary materials and services, starting from their point of origin, to manufacture, and to distribute their products and services to an end user.

1.8 Chapter layout

Chapter 1: Introduction

Chapter 2: Literature review

Chapter 3: Research methodology

Chapter 4: Data analysis and interpretation of findings

Chapter 5: Discussion, recommendations and conclusion

1.9 Conclusion

The term, activity-based costing (ABC), is a somewhat recent innovation and a method used to cost and monitor activities which traces resource consumption and overall costing of all final outputs. Resources are aligned to activities, and activities to cost objects based on the consumption estimates. ABC systems first accumulate overhead costs for each organisational activity, and then assign the costs of the activities to the products, services, or customers causing that activity. In general, ABC does not appear to have been as readily accepted within South Africa's public sector as within the private industry. However, ABC is generally considered a meaningful tool to help leadership manage their operations and resources better.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Eskom is one of the top 20 utility companies in the world measured by generation capacity, with a net maximum self-generated capacity of 41 194 Megawatt (MW). Eskom directly provides electricity to about 45% of all end-users in South Africa. The other 55% is resold by redistributors (including municipalities) (Eskom, 2014:online).

Basic human services still remain a national imperative in South Africa. It is, therefore, of utmost importance that the number one priority of Eskom would be to enhance the cost and the quality of management decisions that would have a direct impact on the quality and quantity of electricity supply (Eskom, 2014:online).

One of the eight material items and risks facing Eskom in 2013 was the late delivery and escalating cost of capacity expansion projects. The late delivery of expansion projects in turn led to a loss of stakeholder confidence, which affected future building projects. Late delivery also placed further pressure on the national supply-demand system and generation maintenance. Project management and assurance processes were put in place to control project costs and ensure timely delivery of projects. With this stated as a key Eskom initiative, it makes sense that an accurate analysis and system of controlled costs should be implemented (Eskom, 2014:online).

In-depth planning of the complicated national grid line of South Africa is needed to achieve Eskom's vision and herewith adding economic growth, infrastructure expansion, competition for scarce materials (coal and equipment), as well as the greater demand for electricity (Eskom, 2014:online).

As according to Business Day Live of 19 March 2014, Finance Minister Pravin Gordhan acknowledged that further delays to infrastructure spending were among the biggest risks to the economy.

Eskom has envisioned the elements depicted in Table 2.1 in their 2013 strategic analysis:

Table 2.1: Eskom’s Way forward

Low cost good investment	The global benchmark for investment analysts.
A trusted company globally	Ethical, well governed and build a trusted relationship with stakeholders.
A greener energy company	To have lower absolute and relative emissions.
Best company to work for	To be rated as the employer of choice in South Africa and Southern Africa by employees and prospective employees.
Top 5 performing utility	To be on the global utility league table and peer benchmarking reports.
Satisfied customers	To have our customers consistently rate us in the top quartile.
Electricity for all	It is in Eskom’s business interest to have electricity for all.
Zero harm	Zero harm to people and environmentally responsible.
Significant regional player	Driving investment in entire value chain (generation/transmission/distribution) and growing customer base

Source: Eskom’s Way Forward – an internal document.

Eskom’s purpose is to provide sustainable electricity solutions to grow the economy and improve the quality of life of the people in South Africa (Eskom, 2013c).

According to Eskom’s (2013a) integrated report, it was stated that its primary purpose is to provide sustainable electricity solutions to assist the economy to grow and to improve the quality of life of people in South Africa and in the region. Eskom’s strategic objectives have aligned itself around the eight key strategic objectives, which emerged from the 2013 review (Eskom, 2014:online).

Eskom’s values are depicted in Table 2.2

Table 2.2: Eskom's values

Zero harm	Eskom will strive to ensure that zero harm befalls its employees, contractors, the public and the natural environment.
Integrity	Honesty of purpose, conduct and discipline in actions, and respect for people.
Innovation	Value-adding creativity and results oriented. Lead through excellence in innovation.
Sinobuntu	Caring.
Customer satisfaction	A commitment to meet and strive to exceed the needs of the receivers of products and services.
Excellence	Acknowledged by all for exceptional standards, performance and professionalism.

Source: Eskom (2013b)

The review of literature and current research indicate that firms often neglect cost accounting methods and use methods that are no longer relevant to their evolving environment (Atrill & McLaney, 2007). Despite considerable progress made in implementing newer cost accounting techniques (Drury, 2011), as well as the huge strides the accounting profession has made over the past few years, activity-based costing principles has not taken as strong a hold in firms as they should have (Mersereau, 2007).

The success of firms depends on the value that can be added to the end users (Drury, 2011). This study specifically focuses on the Eskom Free State Distribution Grid in Bloemfontein, in order to advise Eskom to make proper decisions, as well as to accurately forecast precise and up-to-date costing information.

Failure to maintain strict controls over costs can ultimately result in massive financial losses, damage to reputation and goodwill and even to organisational failure (Merchant & Van der Stede, 2007). Finally, traditional costing, using mainly one volume-based cost driver, has lost its relevance in a manufacturing environment (Johnson & Kaplan, 1987).

Since its introduction in the 1980s, the implementation of ABC has grown rapidly in huge manufacturing companies, but less frequent in the development and

implementation in small manufacturing companies (Needy et al., 2003; Gunasekaran & Singh, 1999).

The importance of a sound distribution network and accurate costing have a direct correlation as to the future growth of our South African economy. (CIMA, 2013:online).

2.2 Eskom power company in South Africa

The prosperity and quality of human life hugely depends on electricity as it is an essential service that adds value to our lives. Eskom was established in South Africa in 1923 as the Electricity Supply Commission. In July 2002, it was converted into a public, limited liability company, wholly owned by the government of South Africa (Eskom, 2014:online).

Additional power stations and major power lines are being built to meet South Africa's rising demand for electricity. In 2005, Eskom embarked on a capacity expansion programme, the largest in its history, which will increase its generation capacity by 17 120 MW and its transmission lines by 4 700km. The capacity expansion programme aims to meet both increasing demand and to diversify Eskom's energy sources. In the six years ending 31 March 2011, the programme has cost R140 billion (including capitalised interest). The total cost of the programme to completion in 2018 is estimated to be R340 billion (excluding capitalised interest) (Eskom, 2014:online). Eskom has approved and committed to:

- Building the Medupi and Kusile coal-fired power stations, two new gas-turbine plants, and the Ingula pumped storage plant.
- Recommissioning three coal-fired plants that were previously mothballed.
- Upgrading other existing plants.
- Building new infrastructure, including new transmission lines and two renewable energy plants.

The completion of the Kusile power station in 2017/18 will constitute the last stage of Eskom's committed capacity expansion programme. There has been no

approval or commitment to any capacity expansion projects after that (Eskom, 2013b).

2.2.1 Eskom in Africa

While most of Eskom's business is within South Africa, the company also buys and sells electricity in the South African Development Community (SADC) region. Eskom's involvement in African markets beyond South Africa is currently focused on projects that have a direct impact on ensuring a secure supply of electricity for South Africa itself. Eskom is investigating additional opportunities in the SADC region (Eskom, 2013b).

Eskom Enterprises SOC Limited has two subsidiaries, Rotek Industries SOC Limited and Roshcon SOC Limited, with an interest in electricity operation and maintenance concessions in Mali, Senegal, Mauritania and Uganda (Eskom, 2013b).

Eskom's Core Strategy is to shift performance and grow sustainability according to the eight strategic objectives, namely (Eskom, 2013b).

1. Becoming a high performing organisation.
2. Leading and partnering to keep the lights on.
3. Reducing the environmental carbon footprint and pursuing low-carbon growth opportunities.
4. Securing future resource requirements, mandate and the required enabling environment.
5. Ensuring financial sustainability.
6. Setting ourselves up for success.
7. To implement coal haulage and a road to rail migration plan.
8. Pursuing Private Sector participation.

Eskom's purpose, values and strategic objectives

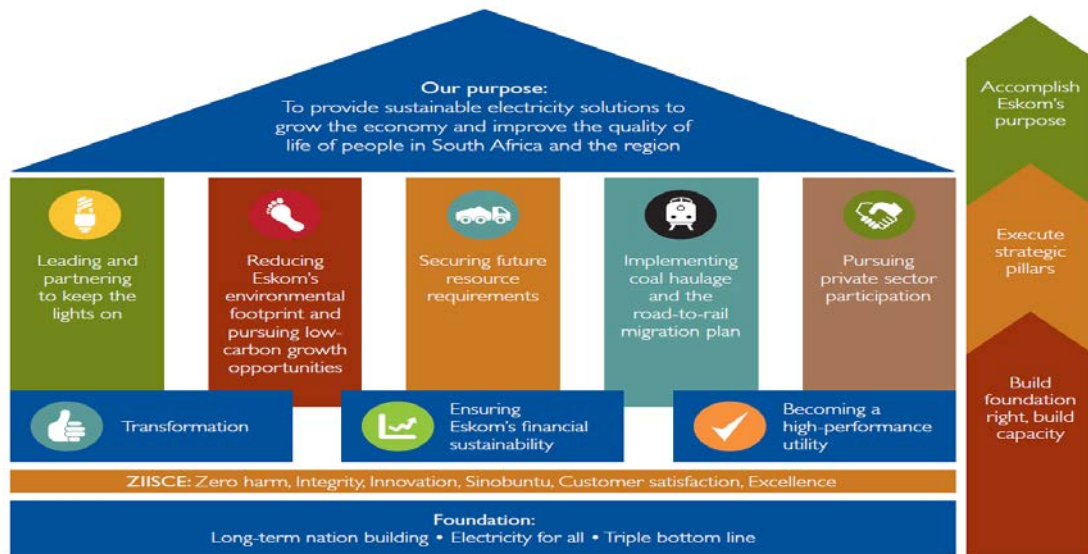


Figure 2.1: Eskom's purpose, values and objectives

Source: Eskom, (2013b)

The objectives identified in the integrated report of 2013 gives Eskom direction to deliver on its purpose, vision and values.

Eskom strives to become a high-performing organisation by transformation into a utility focused on improved customer service; safer, more effective and efficient operations; better service delivery; talent and skills development and management; transparency; as well as consistency in communications (Eskom, 2013a; Eskom 2013b).

Leading and partnering to keep the lights on, Eskom is committed to preventing load shedding by taking a leading role and actively partnering with all key stakeholders, including the people of South Africa, in a comprehensive supply-and-demand management strategy (Eskom, 2013a).

The main objective primarily focuses on ensuring security of electricity supply for South Africa. To enable the above, all of Eskom's projects should be fully funded before implementation, cost-reflective tariffs should be secured and developmental activities should be clearly quantified (Eskom, 2013a).

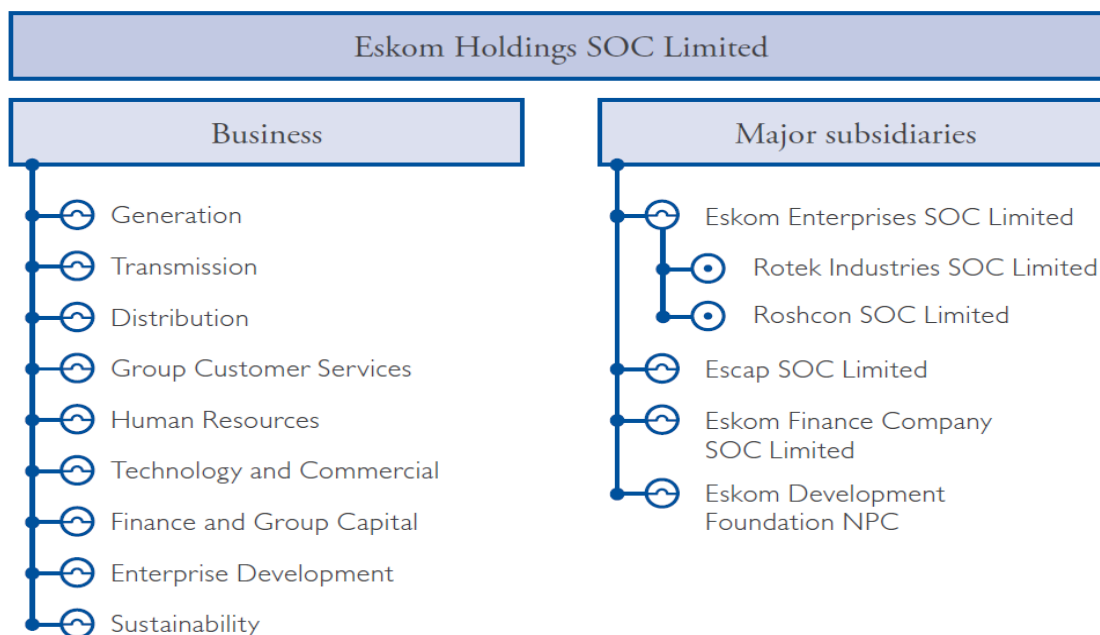


Figure 2.2: Divisions within Eskom

Source: Eskom, 2013a; Eskom, 2013b.

A distribution system's network carries electricity from the transmission system, and delivers it to consumers. The network planning and design criterion adopted by Eskom distribution maximises the number of end users that could be connected with the available funding. Electricity distribution is the final stage in the delivery (before retail) of electricity to end users (Nersa, 2013).

It is in the light of the above that Miller (1996:1) states that the purpose of a management information system is to track and provide information about all aspects needed by an organisation. The current situation in South Africa with regard to electricity supply indicates that this has lagged significantly behind the needs of its current managers and that possible intervention is needed (Eskom, 2013a).

2.3 Activity-based costing in detail

Management accounting is usually informed by cost accounting, which involves measuring the costs of objects and the cost behaviours in organisations. Cost accounting provides cost information for operations control and planning. The information of cost accounting is also relevant for financial accounting and financial reporting. Management accounting incorporates cost accounting

information, plus other accounting and non-accounting information to support managerial decision-making and management functions in general. These are summarized as the score-keeping, attention directing and problem-solving functions of management accounting (Bhimani, Horngren, Datar & Rajan, 2012).

Activity-based costing (ABC) originated in the 1980s from the increasing lack of relevance of traditional cost accounting methods. The traditional cost accounting methods were designed around 1870–1920 and in those days the industries were labour intensive, there was no automation, the product variety was small and the overhead costs in companies were generally very low, compared to the present. ABC has been called one of the most important management innovations since the 1900s (Gunasekaran & Singh, 1999).

So what is the real difference between ABC and the traditional cost accounting method?

According to Bhimani et al. (2012:136) there are three major differences, namely

1. In traditional cost accounting it is assumed that cost objects consume resources whereas in ABC it is assumed that cost objects consume activities.
2. Traditional cost accounting mostly uses volume related allocation bases while ABC uses drivers at various levels.
3. Traditional cost accounting is structure-oriented whereas ABC is process-oriented.

The direction of the arrows in Figure 2.3 on the next page differ, because ABC brings detailed information from the processes up to assess costs and manage capacity on many different levels, as compared to traditional cost accounting methods which simply allocate costs down onto cost objects without considering any 'cause and effect' relations (Emblemsvåg & Bras, 2001).

The historic background of traditional cost accounting methods tend to use direct labour, or any other volume-related allocation base for cost assignment purposes. However, overheads have grown and new technologies have come, therefore

assigning costs based on only 5–15% (in most companies) of total costs, is highly risky.



Figure 2.3: Comparison of ABC and TC

Source: Adapted from Weygandt, Kimmel and Kieso (2011)

2.3.1 Resources versus activity consumption

ABC acknowledges that **one cannot manage costs**, one can only manage what is currently being done and then costs will change as a consequence. In traditional cost accounting, however, the underlying assumption is that costs can be managed. However, most managers have found out the hard way that managing costs is almost impossible (Cooper & Dart, 2012:69).

The benefit of the ABC mind-set is that it opens up a much broader spectrum of measures when it comes to improving productivity by investigating systematically what is being done, i.e. the activities, misallocations, shortages or surpluses. A result of this might be that costs are cut the traditional way, but it might as well lead to a reallocation of capacity to where it is most needed, which will yield high productivity more effectively than the traditional way (Cooper & Dart, 2012:101)

According to Cooper and Dart (2012:136) ABC assigns costs according to the **'cause and effect'** relationship between activities and cost objects, which is captured using drivers. The drivers are, therefore, not allocation bases in a traditional sense, although they work the same way mathematically – drivers are estimates of actual cost behaviour and can, therefore, also be used to identify, or they are themselves, the critical cost factors. Because the drivers are related to

the actual processes, they occur on several levels. The four most common levels identified by Cooper and Dart (2012:202) are:

1. **Unit level.** Unit level drivers are triggered for every unit that is being produced. This is therefore a volume related driver similar to the traditional allocation bases.
2. **Batch level.** Batch level drivers are triggered for every batch produced. The numbers of batches produced are used as a driver.
3. **Product level.** Product level drivers are triggered for every product regardless of the number of units and batches produced.
4. **Facility level.** Facility level drivers are drivers that are not related to the products at all. Costs that are traced by such drivers will therefore be allocated to products and not traced.

Hence, the traditional usage of fixed and variable costs is totally meaningless in today's market. In ABC, all costs are included. However, ABC employs a different usage and definition of fixed and variable costs. A fixed activity cost is a cost that exists due to the very existence of the activity, whereas a variable activity cost changes as the output of the activity changes (Cooper & Dart, 2012:202).

ABC has two types of drivers with regards to cost assignment (Cooper & Dart, 2012:202):

1. **Activity drivers** that track how cost object behaviour influences activity levels.
2. **Resource drivers** that track how the subsequent activity level affects the resource consumption.

2.3.2 Structure-orientation versus process-orientation

Traditional cost accounting systems are structurally oriented and the process view is completely missing. ABC is process-oriented and gathers information from the processes; it can, therefore, be used to identify what needs to be actioned, as well as how to allocate resources more effectively. ABC can, therefore, give managers the ability to match the resource needs with the available capacity as closely as possible, hence improving productivity (Kim, Hatcher & Newton, 2012).

The structure oriented approach of traditional costing systems gives no decision support in allocating capacity to match resource needs. Over time this leads to cost inefficient organisations and poor profitability (Kim et al., 2012).

Kim et al. (2012) viewed ABC as more than a method for cost accounting; it provides a whole new way of management, such as:

- The identification of critical success factors that enables continuous improvement of product and process design.
- The link between cost information and other information enables a much wider array of improvement strategies than traditionally acknowledged.
- The identification of the cost of quality and the process-orientation in ABC provides a link to various quality management methods.

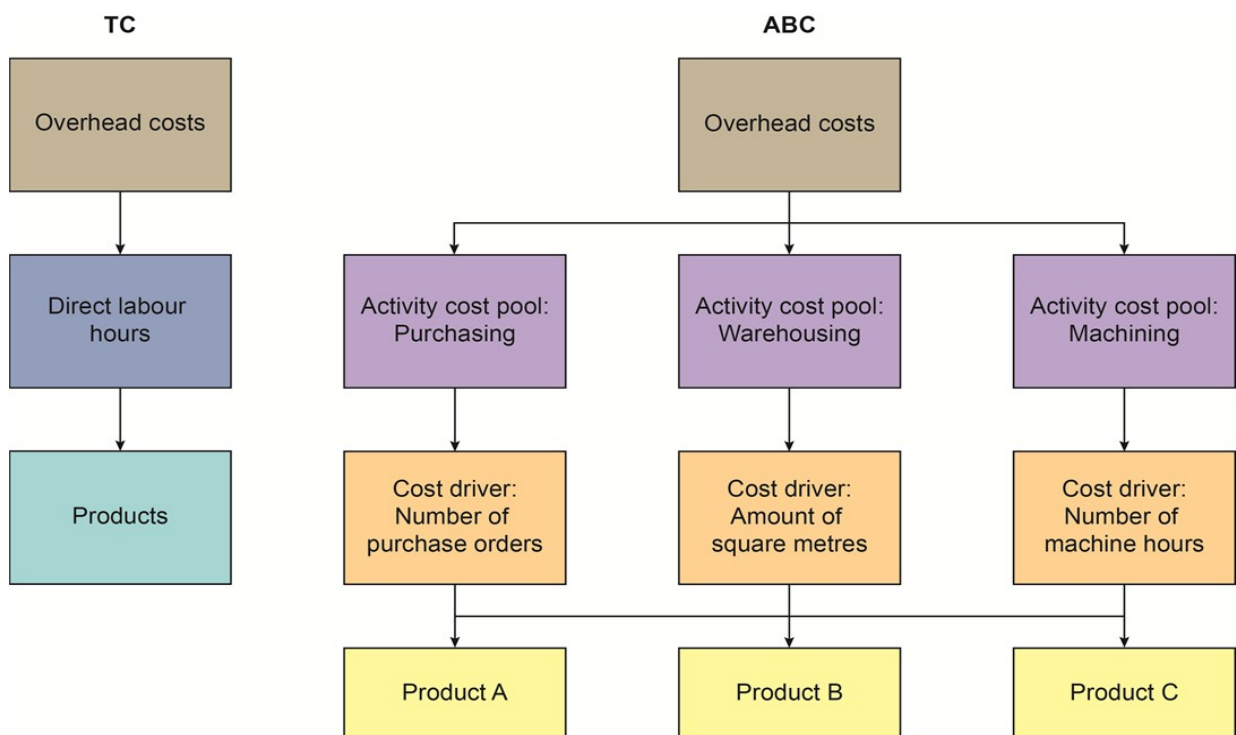


Figure 2.4: ABC and TC differences

Source: Adapted from Weygandt, Kimmel and Kieso (2011)

Turney (2008) studied the evolution of ABC since it first occurred in the 1990s and identified several phases of development over the years. A total number of six phases were identified by Turney and he discussed its evolution into the product it is today. Turney (2008) further stated that, like most innovations, the initial element of hype may be replaced with evolution and eventual maturity. The phases are

illustrated in Figure 2.5 below, demonstrating the changes in the ABC application since its beginning. This figure shows its evolution from being a tool to improve profitability to forming an integral part of strategic management within the organisation, reflecting a change in approach. This holistic approach sees ABC being used as a costing methodology and a decision-making tool for short-term product mix decisions as well as long-term investment decisions.

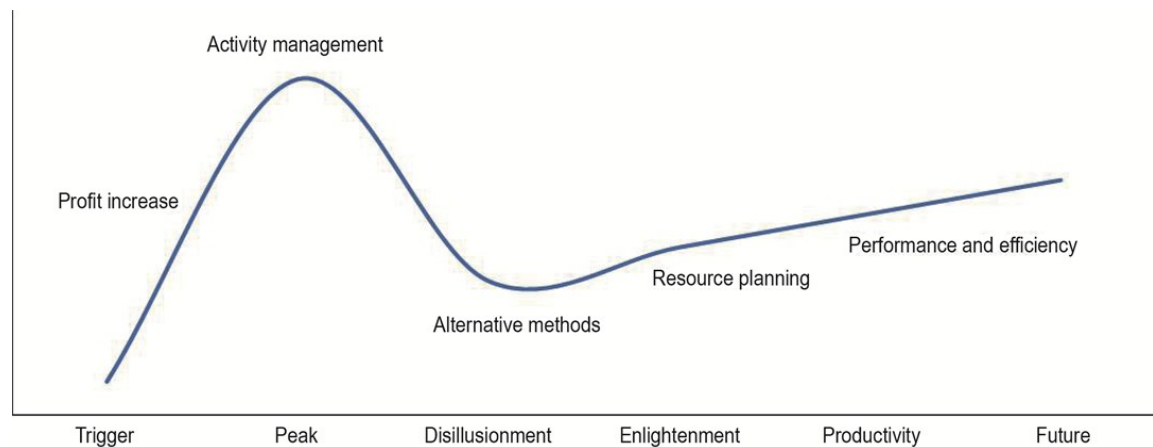


Figure 2.5: ABC maturity development over the years

Source: Adapted from Turney (2008)

Due to the pressures of the competitive environment, companies should ensure that pricing structures are efficient and effective. ABC addresses the pricing distortions that exist in traditional costing systems (Raz & Elnathan, 1999), and managers are provided with a holistic view of cost management. It provides better profitability measures and improved product costing that leads to a better estimate of job costs for pricing decisions (Blocher, Stout, Cokins & Chen, 2008).

ABC, though it provides better information for product costing than the traditional costing system, is not a cure-all for all managerial concerns (Raiborn & Kinney, 2009). The barriers that impede ABC adoption by companies may be the individual, organisational and environmental barriers. Individual barriers are related to fear of the unknown or shifts in the status quo, the potential loss of status or a necessity to learn new skills. Organisational barriers are often related to territorial or corporate culture issues. Environmental barriers are often built by employee groups, regulatory agencies or other stakeholders of interest (Raiborn & Kinney, 2009).

Raiborn and Kinney (2009) confirm that ABC requires a significant amount of time and is thus costly to implement and it does not conform specifically to generally accepted accounting principles (GAAP). It suggests that some non-product costs should be allocated to products, whereas certain other traditionally designated product costs should not be allocated to products. To summarise, managers of small manufacturing companies may be overwhelmed by the time and effort required to develop an extensive ABC system (Needy et al., 2003).

Traditional costing systems were developed decades ago, when most manufacturers produced a narrow range of products. More recently, manufacturers have started producing a wider range of products, and the conventional methods were no longer sufficient to accurately allocate overhead costs to products and services. It is against this background that ABC has emerged as an alternative to conventional costing systems (Drury, 2011).

ABC, a process of individually listing and measuring the cost of each activity contributing to the production and delivery of a particular product or service, was developed in the USA by Harvard Business School Professors Kaplan and Cooper, in order to overcome some of the limitations of the traditional costing system (Drury, 2011).

2.4 Conclusion

Chapter 2 gives direction to the founding of Eskom as well as its importance in the economy. The ABC method is discussed in detail. Chapter 3 focuses specifically on the methodology used in the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The research methodology discussed in this chapter will draw focus to the methods used when analysing data obtained during the course of the study involving activity-based costing versus traditional costing in Eskom Free State Distribution. Hussey and Hussey (1997:54) defined methodology as “the total approach to the research process, from the theoretical underpinning to the collection and analysis of the data”. The methodology provides the rationale behind using a particular approach and the methods employed to obtain analysed data from the approach (Jankowicz, 2000:212). The method used in evaluating the different approaches involving activity-based costing and traditional costing in Eskom and the results of the variances are considered in detail. A qualitative and quantitative research paradigm was used for this research. Qualitative research is preferable in cases where quantitative studies are not able to properly explain a phenomenon as it is still not properly understood and a hypothesis difficult to formulate (Packer, 2010).

Due to the emergence of advance manufacturing technologies (AMT), electricity as well as other industries are adopting higher production automation and product diversification. An important factor in estimating total production cost includes the production overhead cost element in any product cost. Different methods such as absorption costing, variable costing, throughput costing and activity-based costing seem to be yielding a slow rate of adoption due to non-active support from top management as a huge time constraint is usually involved. Companies who manufacture a narrow range of products and where there is simple direct material and labour were considered as dominant factory costs in prior years. In those prior years a small proportion of total production cost accounted for overhead costs and the effect of distortion due to inappropriate allocation was not significant. Justification of more complicated overhead allocation methods was difficult due to high information processing costs.

In the current modern world era, companies are producing a much wider range of products and therefore direct labour accounts to a smaller proportion of total manufacturing overhead, whereas overhead costs becomes a dominant part of total manufacturing cost.

Holzer and Norreklit (1991) suggested that the demand for more accurate product cost has increased due to the increased opportunity cost of having inappropriate costing information and decreased cost of operating more complicated cost systems. So this accounts for the emergence of an alternative approach given by Cooper and Kaplan, the ABC system. Not much research work has been done on the assessment of the ABC system in South Africa, specifically with respect to the electricity sector.

Proper cost-to-benefit analysis needs to be done before implementing any management accounting system. ABC systems are considered more useful as compared to traditional costing in measuring product cost, identifying profit and understanding cost drivers. Investment in advance manufacturing technologies can be evaluated and its implementation may also result in better planning and control of cost (Holzer & Norreklit, 1991).

The ABC system requires first to identify activities within an organisation in order to identify the cost driver related to that activity. Cost pools are generated from which cost rates are determined and charged to products accordingly. According to Homburg (2001) selecting cost drivers is an important issue in implementing the ABC system as precision must be traded off against the complexity of the system. On the one hand, a high precision in allocating factory overhead costs often requires a large number of cost drivers while on the other hand, a small number of cost drivers are necessary to attain acceptable levels of cost information and to make the ABC system easily understandable for management. So the selected cost drivers also bear the cost of drivers which are not selected. The ABC system uses cost drivers at unit, product, batch and facility level to allocate cost as compared to conventional traditional costing system which just uses unit level characteristics of goods (Homburg, 2001).

Eskom's top management is satisfied with their current costing system, planning to implement ABC in future, but due to the overall lack of resources and high cost of system implementation this currently remains as a want and not a need (Eskom, 2014:online).

3.2 Research design

Research design may be regarded as a means to structure a research project in order to address a defined set of questions. According to Hussey and Hussey (1997:114), research design can be defined as a "detailed plan" that should act as a guide or plan of action, so that the most valid research findings become evident. It is a "deliberately planned" route to follow in the collection and analysing of data so that the aim of the research will become clear (Jankowicz, 2000:190).

The research objective of this study is to identify the factors that have a direct influence on the successful implementation of ABC within the Eskom finance division.

The secondary objectives are:

- to determine whether ABC will be successfully implemented;
- to determine the benefits of ABC; and
- to determine the effect of external factors on the successful implementation of ABC.

According to Jensen and Meckling (1992), the main purpose of the managerial accounting software is to provide control by reducing conflict, to attach the policy to resources allocation and to aid the company's internal coherence. Cooper (1989) identified that due to the increasing ratio of manufacturing overhead in product cost, using direct labour hours or costs (volume-based allocation bases), results in incorrect cost allocation. Cooper (1989) had further analysed that, due to increasing diversification in volume of product, size and complexity, the significance of cost distortion under the traditional costing system has increased. Other studies also show the same results (Turney, 1991; Cooper & Kaplan, 1998; Turney & Stratton, 1992).

Holzer and Norreklit (1991) suggested that the demand for more accurate product

cost has increased due to the increased opportunity of having inappropriate costing information and decreased cost of operating a more complicated cost system. This accounts for the emergence of an alternative approach given by Cooper and Kaplan (1998), namely the ABC system. The need for accurate cost information was one of the major reasons for adopting ABC.

The research design involves planning and execution of the various variables that are necessary to accomplish the research aims and objectives. It is pivotal to provide answers to questions about the kind or type of study to be done, the collection and investigation techniques that would best employ the available resources and answer the research questions. According to Sekaran (1992:95), the best way to gain familiarity with the problem is to perform preliminary research before a model or design can be developed to investigate and understand the occurrence or trend.

Other factors would include the selection of sample sizes, the classification of the particular population to be examined and the various methods of data collection (Jankowicz, 2000:193).

The in-depth nature of semi-structured interviews could possibly discover other practical issues not commonly discussed in research articles or textbooks. Wengraf (2004) explained a semi-structured interview as an interview with questions prepared in advance; however, these questions need to be supplemented with follow-up questions and probing. He further suggested that semi-structured interviews afford the researcher a smaller sample size as more information can be collected from participants. Although it may be likely that these established factors do influence the successful implementation of ABC and that these factors may have to be tested, by default the possibility of a number of additional contributing factors should probably not be discounted. Different participants may provide different perspectives that were not envisaged by the researcher at the beginning of the research process. The objective is not to provide a blueprint for organisations to implement ABC, but rather to broaden the knowledge base in terms of factors that may need to be considered prior to ABC implementation (Wengraf, 2004).

Research design includes factors such as choosing the data collection practices from sources, such as secondary (literature and past studies) and primary data (new empirical information) (Melville & Goddard, 1996:17).

The research technique used in the study was of a quantitative nature, making use of surveys to ascertain the data required.

3.3 Research methodology

A research method is a systematic and orderly approach taken when collecting and analysing specific data to enable that meaningful information can be obtained from the selected data (Jankowicz, 2000:209). According to Hussey and Hussey (1997:54) the various methods used to distinguish between the ranges or measures by which data is collected and analysed, in other words research methodology, involves the following identified areas:

- Why you collected certain data
- What data you collected
- From where you collected it
- When you collected it
- How you collected it
- How you will analyse it

Structured questionnaires were used in the research study as it involved obtaining information from respondents. The purpose was to gain data on the personal financial management practices of the individuals in Eskom Distribution Free State, their perceptions, attitudes and behaviours concerning the current costing system as compared to the proposed activity-based costing. After the needed information was gathered the data needed to be analysed using statistical procedures to match the specific research objectives defined.

The personnel within the accounting and project management departments were asked to reply to the questionnaire on their perceptions, experiences and understanding. Telephonic and personal interviews were also conducted. The questionnaire was sent to 25 employees out of which 25 responded, which accounts to a 100% response rate. The response rate was very low initially, therefore, the accounting and project management departments were contacted telephonically in order to complete the questionnaire and to enhance the response rate. The telephonic interviews resulted in interesting feedback why the accounts

and finance employees had not replied to the initial e-mail. Their reasons are stated below:

- The employees have no idea what the ABC system entails.
- They were busy with the monthly reporting.
- The questionnaire was too lengthy.

The questionnaire was designed to consist of three sections namely A, B, and C, which was designed to gain some general and specific idea of respondents and they also represented three objectives of this research. Most of the questions were close ended as this enabled the questions to have a guided response, which encouraged the participants to have a greater interest in answering the questions. Key questions were formatted in tune with the Likert-type scale.

Questions included in Section A were devised to get an idea of the size of Eskom's costing system and employees' satisfaction level with their current costing system if other than the ABC system. Section B was aimed to identify the reasons for not implementing ABC, whereas Section C identified the perceptions of the employees regarding the reasons why management was not motivated to implement the ABC system in future.

The research methodology most appropriate to address the research problem: measuring the impact of ABC as a better decision-making tool on effective business performance within Eskom Distribution Free State is highlighted in this chapter. The research design and methodology outline the population and sampling techniques employed to gather data for this investigation.

3.4 Population choice

According to Sekaran (1992:225), a population is "a group of people, events or things of interest that the researcher wished to investigate". Studying an entire population is not possible in most scenarios, therefore, a sample that epitomises the population is representative of the population. If not, no observations can be drawn from the sample (Melville & Goddard, 1996:30).

The unit of analysis used in this particular study, was individual employees. Costing principles within Eskom was analysed, individual perceptions noted, and attitudes

and behaviours examined to determine the extent of the research problem.

The defined set of people or collection of items that was under examination were the working population of a particular country, workers in a particular company, industry or department (Hussey & Hussey, 1997:55).

The specific target population selected was an important determinant in substantiating the research objectives.

3.5 Target population

This study analyses the information obtained from employed individuals within the Eskom Free State Distribution area. The individuals selected to participate in the survey concerned ranged from lower to higher income and have qualifications varying from matric certificates, university/universities of technology degrees or diplomas, as well as other technical qualifications. The selected sample included individuals of different age levels, gender, as well as income groups, to demonstrate the difference in the overall perception pertaining to the ABC system.

For the purpose of this study the researcher selected a structured questionnaire which was administered to 15 finance related middle management and ten engineers as the research instrument for the quantitative method of research and focus group interviews were held for qualitative research method.

3.6 Sampling

Sampling is when an adequate number of respondents from a certain population are selected, so as to generalise the characteristics of the population throughout the study. By investigating the specific sample, the researcher will be able to draw a distinctive conclusion about the particular population (Sekaran, 1992:226).

Non-probability sampling and probability sampling are the two types of sampling used in research. Non-probability sampling refers to establishing a sample from a population where the respondents are identified and questioned because of certain variables such as their background, position, roles or experience. In terms of ABC adoption the researcher was interested in variety and had no wish to generalise findings. Probability sampling differs from non-probability sampling in the sense that

the respondents are identified because they are part of a certain population. The same questions are posed to each respondent and the researcher aims to generalise the findings to be specifically related towards the particular selected population (Jankowicz, 2000:193).

The probability sampling selection method used was a convenient and conscious method, whereby individuals working fulltime at the Eskom Free State Distribution Centre were asked to complete the questionnaire.

The data collected in the study consisted of *semi-structured questions* in *interviews* with individual engineers and senior executives within the Eskom Free State Distribution Grid in Bloemfontein. A qualitative research design of exploratory nature was suggested, facilitated by semi-structured interviews as well as focus-group interviews within the finance division.

The population consisted of 22 top managers, 10 engineers and the 12 financial personnel members. A sample size of 25 was used in proportion to the total population.

3.7 Data analysis

The researcher's methods illustrate the use of standardised measures so as to enable the varying perspectives and experiences of people to be fitted into a limited number of predetermined response categories to which numbers are assigned (Patton, 2002:14).

Sekaran (1992:275) classify data analysis as the following steps:

1. Getting data ready for analysis.
2. Getting a feel for the data.
3. Testing the goodness of the data.
4. Testing the hypotheses.

The steps identified were followed during the course of the study. The questionnaires were coded and categorised. The correlations of the data were calculated to get a feel for the data. Validity and reliability were established and the research questions were answered by using statistical manipulation.

Schoenbach (2004: 461) posited 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, a considerable amount of preparatory work must be carried out. Schoenbach (2004:461) outlined the following as the major objectives to consider in analysis of data for research studies:

1. Evaluate and enhance data quality.
2. 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).
3. Assess potential for bias (e.g., non-response, refusal, and attrition, comparison groups).
4. Estimate measures of frequency and extent (prevalence, incidence, means, medians).
5. Estimate measures of strength of association or effect.
6. Assess the degree of uncertainty from random noise (chance).
7. Control and examine effects of other relevant factors.
8. Seek further insight into the relationships observed or not observed.
9. Evaluate impact or importance (Schoenbach, 2004: 461).

A 4-point Likert type scale was used in the questionnaire and the respondents were instructed by the researcher to mark the most suitable answer. The scale ranges from 1 to 4 as follows:

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

The SPSS (version 13.0 for Windows) programme was used in the statistical analysis of the data regarding significance for the population.

Descriptive statistical methods such as means, medians, standard deviation and

frequency distribution were used to analyse data, as well as binominal statistical analysis.

3.8 Data collection methods

The method of data collection used in this study was through quantitative questionnaires distributed to employed individuals within the Eskom Free State Distribution Centre.

The following key functions in the research process are performed by a questionnaire:

- Research objectives are transformed into specific questions.
- Standardised questions and response categories are identified.
- A questionnaire is an enduring record of the research.
- Questionnaires facilitate data analysis (Burns & Bush, 2003:344).

Semi-structured questionnaires – Fifteen finance related managers and ten engineers were given questionnaires to complete in the Free State Grid.

Semi-structured interviews – conducted with ten engineers.

Focus group interviews – conducted with finance staff of Eskom Free State Distribution Centre.

The study was conducted by means of semi-structured interviews that included the completion of the questionnaire. The interviews were mostly conducted at the participant's place of work during working hours. The interviews ranged from 32 to 60 minutes, with an average duration of 25 minutes. All the interviews were recorded with a digital voice recorder, and additional notes were taken by the researcher. All the interviews except one were conducted in person, face-to-face. One of the interviews was done telephonically and involved two participants. The digital voice recordings were transcribed by a transcription professional.

For this study, composite tables and graphs were used. The mean values were used to answer the research questions. The most positive and most negative responses were also discussed. This will give insight into how staff within Eskom

Free State Distribution Centre perceived ABC as a decision-making tool towards improved financial business performance.

A total of 25 questionnaires were returned by the participants which represents a response rate of 100 per cent.

3.9 Conclusion

The data analysed in this chapter examined the research methodology used in collecting and investigating the data necessary to answer the objectives. The target population was identified and defined and the sample was selected to correspond with the characters and features depicted to form a representative section of the population.

Data was collected by making use of quantitative questionnaires disseminated to the selected sample of individuals. The data obtained from these individuals were processed and analysed with the use of statistical software, binominal and descriptive statistical methods.

Gupta and Baxendale (2008: 7) stated that reducing costs the ABC way, almost always improves quality. ABM fits well with any quality improvement.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The main objective of this research study was to understand the factors that have a direct influence on the successful implementation of ABC in Eskom's finance field. In order to achieve the objective a literature review was conducted and discussed in Chapter 2 and Chapter 3 .Chapter 3 discussed the methodology followed within this research study. This chapter presents and discusses the results of the correlation analysis of the research and the overall assessment and reliability of the research data. Descriptive statistics were used to summarise quantitative data.

The research was conducted in this manner to ensure open-ended responses from participants and to investigate participants' perceptions of factors they considered important for ABC implementation success in the interviews. The researcher received a hundred percent response rate for the quantitative research with questionnaires which is summarised in detail below. Although all participants worked within Eskom, they were all from different divisions of Eskom (finance and engineering) and were, therefore, able to provide distinctly different perspectives on the topic of ABC.

Participants provided answers and gave 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 provided (Scott & Usher, 2000: 109).

The data collection for this study took place during June and July 2014, and was carried out by the researcher. For research purposes, the focus was on Eskom Free State Distribution Centre because of relevance and easy access. The above process assisted with quick response rates, efficiency in gathering the data, and to minimize the disruption within the targeted departments.

Chapter 4 consists of three sections. The first section details the statistical analyses; the second section presents the results of the questionnaire which represent the study objectives, and the third represents the results obtained from the focus group interviews.

4.2 Statistical analysis of the targeted sample

The characteristics of the targeted sample are described and discussed next.

- Response rate
- Demographic data
- Analysis of the questionnaire
- Data analysis

4.2.1 Response rate

As indicated in Table 4.1, a total of 25 questionnaires were e-mailed to a sample of permanent middle management employees within the Eskom Free State Distribution Centre. The participants in the study were representative of engineers, managers and finance staff who use and implement ABC and ABM strategies. These were considered the major sections dealing directly with ABC. Twenty five questionnaires were acknowledged by the addressees and 25 questionnaires were returned by the participants which represents a response rate of 100 per cent. The response rates are reflected in Table 4.1.

Table 4.1: Response rates of structured questionnaire

	ENGINEERS	FINANCE	TOTAL
Population	30	15	45
Sample	10	15	25
Responses	10	15	25
% returned	100%	100%	100%

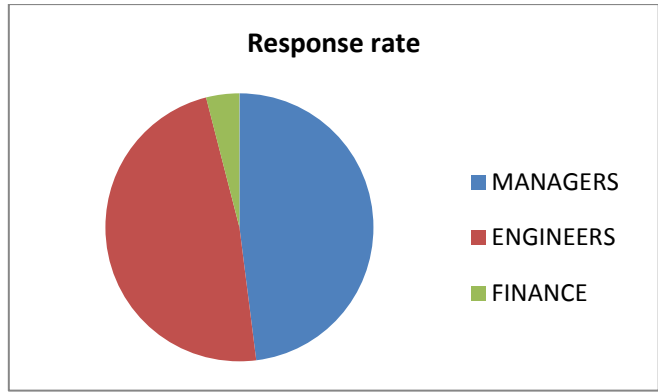


Figure 4.1: Response rate

4.2.2 Demographic data

4.2.2.1 Number of years working in the organisation

Demographic data regarding years of service was collected and this is reflected in Table 4.2. The majority of participants (48%) were in service between 5-10 years. One employee (4%) was working for the organisation between 16 and 20 years.

Table 4.2: Participants' years of service

YEARS WORKING IN THE ORGANISATION				
	Frequency	Percentage	Cumulative frequency	Cumulative %
5–10	12	48%	12	48%
11–15	6	24%	18	72%
16–20	1	4%	19	76%
21–25	2	8%	21	84%
26–30	4	16%	25	100%

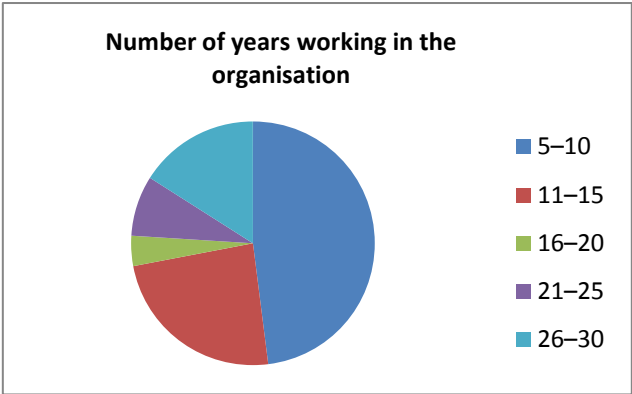


Figure 4.2: Years working in the organisation

4.2.2.2 Age of participants

A large amount of experienced staff (16%) participated in the research. As can be seen from Table 4.3, the majority of the participants (56%) were aged between 31 and 40.

Table 4.3: Participants age at time of study

AGE				
	Frequency	Percentage	Cumulative frequency	Cumulative percentage
21–30	3	12%	3	12%
31–40	14	56%	17	68%
41–50	2	8%	19	76%
51–60	5	20%	24	96%
61+	1	4%	25	100%

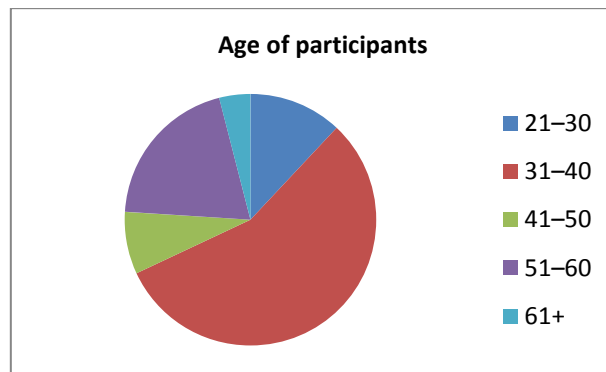


Figure 4.3: Age of participants

4.2.2.3 Gender of participants

As can be seen from Table 4.4, the majority of the participants were male as the core business of Eskom is engineering which is a male dominated environment.

Table 4.4: Demographic data of participants

GENDER		
	Frequency	Percentage
Male	20	80%
Female	5	20%

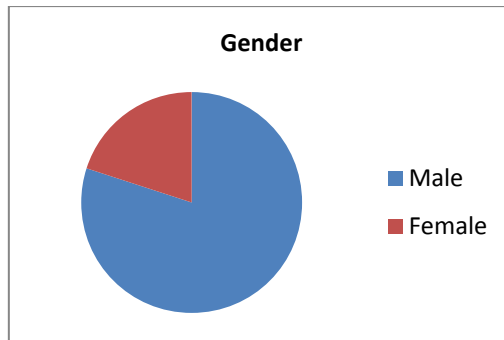


Figure 4.4: Gender of participants

4.2.2.4 Race of participants

The majority of the participants were Black (52%) followed by Whites (28%) and Coloureds as the lowest at 20%. Because the sample population was quite small, it is interesting to note that the difference between the White and Coloured respondents is only two employees.

Table 4.5: Race of participants

RACE		
	Frequency	Percentage
Black	13	52%
White	7	28%
Coloured	5	20%

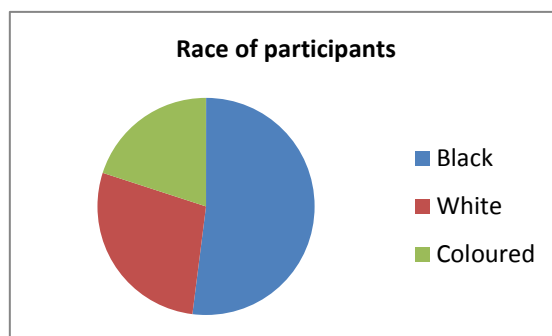


Figure 4.5: Race of participants

The next section provides a detailed study of the analysis and interpretation of the data.

4.3 Analysis of the questionnaire

For this study, composite tables and graphs were used. The mean values were used to answer the research questions. The most positive and most negative responses are also discussed. This will give insight into how staff within Eskom Free State Distribution Centre perceived ABC as a decision-making tool towards improved financial business performance. The SPSS program was used to analyse the data gathered for interpretation.

4.3.1 Data analysis

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

With regard to the quantitative research, this study made use of the 4-point Likert scale to obtain ratings, on a sequence from 1 = strongly disagree to 4 = strongly agree. The mean scores represent the average 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 and above indicates a high level of satisfaction;
- A score of between 1.5 and 2 indicates an acceptable level of satisfaction;
- A score of between 1 and 1.5 indicates huge room for improvement.

4.4 Research objectives

As indicated in Section 1.3, the three objectives of the research are to establish the perception of the staff within the Eskom Free State Distribution Centre regarding the following:

- The successful implementation of ABC.
- The benefits of ABC implementation.
- The effects of environmental factors on the successful implementation of ABC.

Whenever a business is encountering an economic recession, the company will learn to survive by reviving itself, or by adopting new techniques or innovations. According to Hurst (1995:2), ABC, which is an advanced management accounting system focusing on accuracy of product costs, is claimed to be able to overcome the information distortion of the traditional cost systems and to furnish huge benefits leading to improved organisational performance and profitability (Chongruksut, 2002:97).

In addition, some empirical evidence shows that an organisation encountering increasing competition is predisposed to adopt an innovative management control system (Yakhou & Dorweiler, 1995:99). Therefore, the adoption of ABC may be one of many modes of transformation within Eskom to revitalise and survive during its current trying period. The implementation of ABC could solve the shortcomings of the traditional cost system and improve financial performance.

4.5 Sections of the questionnaire

Under this section, the results of the three sections of the questionnaire, which represent the three objectives of the research, are discussed.

- On which grounds do you think that Eskom will succeed in successfully implementing ABC?
- Which benefits do you think Eskom will gain by implementing ABC?
- Which environmental factors will affect the implementation of ABC?

These results are discussed individually under the following headings:

- General discussion.
- Table and graph.
- General discussion of similar studies of the results.
- Detailed discussion of the results.
- Summary of the most significant results.
- Conclusion.

4.5.1 Objective 1: The successful implementation of ABC within Eskom

The results and discussions of assessing the perception of the participants regarding their opinion on what grounds they think Eskom will successfully implement ABC are reported in this section.

4.5.1.1 General discussion

Individual respondents were asked to indicate, in their opinion, on which grounds the company will succeed in the implementation of ABC. These questionnaires were ranked on a four-point Likert scale (1 = strongly disagree and 4 = strongly agree).

The data was collected by means of semi-structured questionnaires with multi-item measures (Ravid, 2000:49; Sekaran, 2000:16), which was e-mailed to the finance and engineering managers. According to Roberts (1999:53), such structured questionnaires will present multi-item measures in order to eliminate misunderstandings or misinterpretations.

As can be seen in Table 4.6, most of the respondents (84%) indicated that they possessed a good understanding of ABC. Only 16% of the respondents disagreed with statements which 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 as well as its current implementation.

4.5.1.2 Table and graph

Table 4.6 (on the next page) reflects the responses of the respondents on a composite table and graph. In this part of the questionnaire the respondents were asked to indicate their understanding of ABC.

Table 4.6: Responses regarding understanding of ABC

N	Mean	% Agree Total	% Disagree Total	DESCRIPTION
25	1.00	100.00	0.00	Sound financial behaviour is paramount in business today.
25	1.00	100.00	0.00	Financial behaviours in any organisation play a vital role.
25	1.00	100.00	0.00	Management buy-in is important before ABC implementation.
25	1.00	100.00	0.00	ABC is an effective tool towards cost reduction.
25	1.48	100.00	0.00	ABC assumes that activities cause cost.
25	2.62	52.38	47.62	Cost information is used in making a wide range of operational decisions.
25	2.19	66.67	33.33	The manager fosters a positive environment where change is likely to occur. Continuous improvement.
25	1.43	95.24	4.76	Eskom Transmission's biggest budgetary challenge is overspending.
25	3.67	9.52	90.48	ABC and ABM are strongly related in the grid.
25	1.90	95.24	4.76	ABC assists the Grid with budgeting more accurately.
25	1.86	95.24	4.76	ABC is used to analyse business financial performance in the Grid
25	1.00	95.24	4.76	There is a need within the organisation to reduce cost to be more cost effective
	1.68	84.13	15.87	

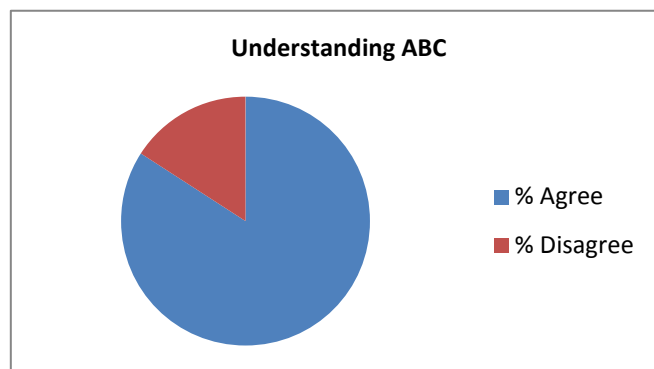


Figure 4.6: Responses regarding understanding of ABC

4.5.1.3 General discussion of the results

The above research has indicated that the following factors are significant in the Free State Distribution Grid

- All (100%) of the participants concurred that sound financial behaviour is paramount in business today, thus management buy-in is important before ABC implementation;
- An average mean-score of 1.68 indicates a high level of understanding of the ABC concept as well as its implementation. The results indicate that the Grid has a positive perception with regard to ABC. The Grid is already using ABC to a large extent with regard to budgeting, cost reduction and financial analysis and future costing models.

4.5.1.4 Detailed discussion of the results.

The most significant factors in the implementation of ABC are the following:

- Top management intends to provide adequate resources to the implementation of ABC in the future; mean score = 3.5.
- Operating departments have shown commitment for ABC implementation; mean score = 3.8.
- Top management has a clear commitment to use ABC information; mean score = 3.7.
- The non-accounting/finance groups are committed to use ABC information; mean score = 3.7.

The results suggest that the provision of adequate resources and the commitment of all stakeholders were perceived as a prerequisite for successful ABC implementation.

When ABC is linked to performance measurement and compensation, and when employees believe that the resulting system fairly represents their performance, they will be motivated to ensure the success of ABC. However, this does not seem to be the case as can be seen in the results above.

The research revealed that the following factors were the least important when implementing ABC:

- Compensation systems designed to motivate employees to implement ABC; mean score = 2.1.
- ABC data has been used for performance evaluation; mean score = 2.1.

- Education of ABC implementation has been provided; mean score = 2.1.
- ABC has strong active support of top management; mean score = 2.0.

4.5.1.5 Summary of the most significant results.

The message employees perceive will impact on the credibility of the initiative and the ABC model since employees are typically responsible for feeding information to the ABC model.

4.5.1.6 Conclusion.

This finding indicates that the implementation process in Eskom is positive. This is mainly due to strong indication of top management providing adequate resources, had clear commitment to use ABC information, operating departments have shown commitment for ABC success

4.5.2 Objective 2: Determining the benefits of implementing ABC

The results and discussions of assessing the perception of the participants regarding their opinion of which benefits they think the company has gained by implementing ABC are reported in this section.

4.5.2.1 General discussion

Individual respondents were asked to indicate, in their opinion, which listed benefits the company has gained in the implementation of ABC. These questionnaires were ranked on a four-point Likert scale (1 = strongly agree and 4 = strongly disagree). Table 4.7 reflects the results of this section of the questionnaire.

4.5.2.2 Table and graph

Table 4.7 reflects the responses of the respondents on a composite table and graph. In this part of the questionnaire the respondents were asked to indicate, in their opinion, which benefits the company will gain in the implementation of ABC

Table 4.7: Continuous improvement of benefits and quality in the Free State Grid

N	Mean	% Agree Total	% Disagree Total	DESCRIPTION
25	2.29	66.67	33.33	Concept of continuous improvement is promoted by management.
25	3.14	33.33	66.67	ABC is seen as continuous improvement concept within the southern Grid.
25	3.19	4.76	95.24	ABM is managing and controlling the firm's performance using ABC information as the focus for decision-making.
25	3.00	19.05	80.95	ABM is a way of determining investment analysis.
25	3.00	52.38	47.62	Total quality management is employed as a cost reduction tool in the organisation
25	3.81	9.52	90.48	The theory of constraint (TOC) as a concept is used in the Grid.
25	1.95	66.67	33.33	ABC can impact business decisions – i.e. investments and asset purchases.
	2.91	36.05	63.95	

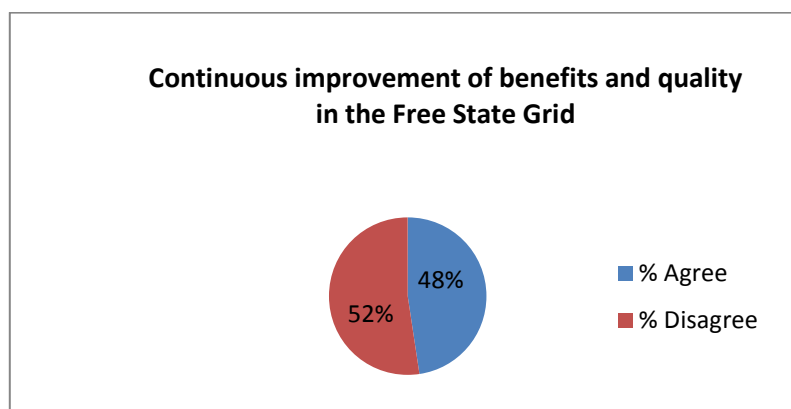


Figure 4.7: Continuous improvement of benefits and quality in the Free State Grid

4.5.2.3 General discussion of the results

As in the case of the positive perceptions on the successful implementation of ABC, the perceptions of the respondents regarding the benefits of ABC were positive. In fact, the respondents were overwhelmingly positive regarding the benefits of ABC, as the mean of 3.3 indicates. All the factors were above the

average of 2.5, which indicates that the respondents perceived the benefits of ABC implementation as very positive.

4.5.2.4 Detailed discussion of the results

The most significant benefits in the implementation of ABC are the following:

- Better allocation of overhead cost; mean score = 3.5.
- Breakdown of barriers between different functional areas; mean score = 3.5.
- The increase in cost control improvement; mean score = 3.4.
- Assistance in product or services design and product or service mix; mean score = 3.4.
- Increase in the effectiveness of budgeting; mean score = 3.4.

It is likely that, in the high competitive environment of a changing economy, cost advantage is important for competition and ABC is a cost planning system that provides information for strategies. Hence, Eskom currently encountering the economic challenges realised this benefit of ABC. On the other hand, the survey revealed that the following factors were the least beneficial during implementing ABC:

- More accurate product/service costs; mean score = 3.0.
- Behavioural incentives to improve manufacturing/service excellence; mean score = 3.0.
- Management attention to interdependencies of departments; mean score = 2.9.
- Decision-making improvement; mean score = 2.9.

Although these factors were evaluated at the bottom of the scale, all the averages are still above the theoretical mean of 2.5.

4.5.2.5 Summary of the most significant results

The respondents perceived the benefits of ABC as very positive.

4.5.2.6 Conclusion

On average the benefits from the implementation of ABC recorded a mean score equal to 3.3. These findings suggested that Eskom experienced positive benefits from the implementation of ABC. This is due to the benefits gained such as, better allocation of overhead cost, breakdown of barriers between different functional areas, increase in cost control improvement, assistance in product or services design of a product or service mix, and an increase in the effectiveness of budgeting.

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

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 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.

4.5.3 Objective 3: Determining the environmental effect of the implementation of ABC

The results and discussions of assessing the perception of the participants regarding their opinion of which environmental effects they think has affected the company in the implementation of ABC are reported in this section.

4.5.3.1 General discussion

Individual respondents were requested to indicate that in their opinion, which listed environmental effect has affected the company in the implementation of ABC. These questionnaires were ranked on a 4-point Likert scale (1= critically important and 4 = not important). Table 4.8 shows the results of this section of the questionnaire.

4.5.3.2 Table and graph

Table 4.8 shows the responses of the respondents on a composite table and graph indicating the perceptions of the respondents regarding the environmental effects of ABC implementation. Respondents were requested to indicate, in their opinion, which environmental effect has affected Eskom during the implementation of ABC.

Table 4.8: Environmental effect of implementing ABC and ABM in the Free State

N	Mean	% Disagree Total	% Agree Total	DESCRIPTION
25	0.2	95.24	4.76	Lack of top management support
25	0.4	90.48	9.52	Lack of software packages.
25	0.8	80.95	19.05	Difficulty in identifying activities
25	1.9	52.38	47.62	Lack of knowledge of data requirement and collection.
25	2.3	42.86	57.14	The main cost drivers within the Grid are well controlled
25	2.7	33.33	66.67	Lack of commitment and co-operation among departments.
25	3.2	19.05	80.95	High cost of implementing ABC.
25	3.6	9.52	90.48	Integration with the current accounting.
25	3.8	4.76	95.24	Resistance to change as well as high cost of ABC implementation

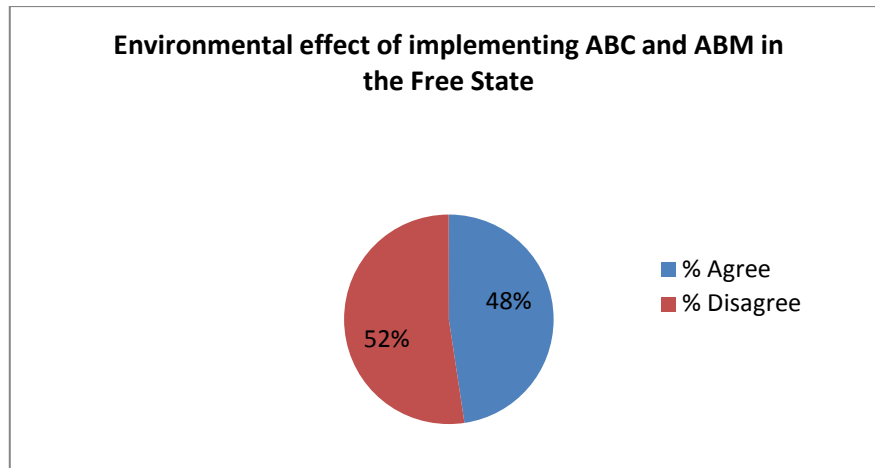


Figure 4.8: Environmental effect of implementing ABC and ABM in the Free State

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

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

- Most participants (95.2%) disagreed with the fact that there was a lack of top management support.
- Most participants (90.5%) disagreed with the fact that there was a lack of software packages available to accommodate the change.
- Most participants (81%) disagreed with the fact that it was difficult to identify the various activities.
- Most participants (81%) agreed that the implementation of ABC was costly.
- Most participants (90.5%) agreed with the fact of integrating with the current accounting system within Eskom.
- Most participants (95.2%) agreed that resistance to change as well as high cost of ABC implementation remains a challenge within Eskom.

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

4.5.3.3 General discussion of the results

The high overall mean of 2.4 indicates that the respondents feel that environmental effects have a significant influence on the implementation of ABC. The most important factors are of a technical nature, such as the high cost of the implementation of ABC, lack of software packages and data problems. Although the difficulty in defining cost drivers, designing systems and the fact that it takes up much of the manager's time, were at the bottom of the table; their contribution were significant compared to an average mean of 2.9.

4.5.3.4 Detailed discussion of the results

The most significant environmental factors in the implementation of ABC are the following:

- High cost of implementing ABC; mean score = 3.2.
- Lack of software packages; mean score = 0.4.
- Lack of knowledge of data requirement and collection; mean score = 1.9.
- The lack of commitment and co-operation among departments; mean score = 2.7.
- Resistance to change; mean score = 3.8.

4.5.3.5 Summary of the most significant results

In order to overcome the environmental effect of ABC implementation, the system should be managed with an overview of what the company wishes to achieve by having the data in the first place. A good implementation plan is essential to ensure that the implementation process is managed effectively, while a commitment to ABC by all employees at all levels in the organisation is vital for its implementation to be a success. It is essential that employees understand the system and their contribution to it. All employees must be trained on the principles and mechanics of ABC.

4.5.3.6 Conclusion

On average the results on the environmental effect of ABC recorded a mean score = 2.5. This finding indicated that the environmental effect of ABC is problematic.

This is due to the high implementation cost of ABC, lack of software packages, lack of knowledge of data requirement and collection, the lack of commitment and co-operation among departments, and resistance to change.

4.6 Conclusion of sections of questionnaire

The findings highlight a number of interesting aspects concerning measuring the successful implementation of ABC in Eskom. The result is consistent with the findings of Roztocki (2000:2) who discovered that top management should focus the resources, goals and strategies on the implementation of ABC. This result confirms the findings of Shield and McEwen, (1996: 15); Waddell, Outwater, Bhat and Blain (2002:12). The results for Eskom confirms the findings of Roztocki (2000: 84) and Tarr (2001:1) that many companies facing a fierce competition in domestic and global markets, implement strategic management tools in order to increase competitiveness.

The results confirm the findings of Garrison and Noreen (2000:25), who iterated that active support by top management is the most crucial factor in the success of ABC implementation. The results also confirm the findings of Roztocki and Needy (1998) and Roztocki and Schultz (2003:6) who reported that companies are prevented from implementing ABC effectively due to lack of data.

4.7 Understanding of ABC through focus group interviews

Study results of the objectives discussed:

Objective 1: ABC implementation and the inherent nature of the organisation and industry it exists in

- **Product diversity and the organisational size and its role in the successful implementation of ABC**

The majority of participants suggested that ABC is practised in a diverse environment in their respective divisions. In most of the plants, the product diversity is fairly uniform – coal electricity, water electricity, hydro-electricity, etc.

It, therefore, becomes a mundane task for Eskom to establish an overhead rate for each different product. A small minority of participants indicated success with ABC despite Eskom not being diverse. However, it is still agreed by most participants that ABC becomes crucial if the number of activities per product is high and the production process for each product is complex. Baird, Harrison & Reeve (2004) established that larger, more diverse organisations require ABC more than smaller organisations. Some participants stated that there are various different activities and cost structures, and these would increase the importance of ABC as the high and low contributors need to be identified. All those different revenue lines have different activities and they all have different costs associated with them. Based on that, Eskom uses ABC per revenue stream or per product line.

Although participants acknowledge that ABC would be more beneficial with increased product diversity, this may be dependent on the ability to identify suitable cost drivers. Sartorius, Eitzen & Kamala (2007) suggested that the difficulty in identifying cost drivers is a major reason for South African organisations to reject the use of ABC. According to participants, a common problem that increased product diversity is the challenge of accurate costing when common lines are shared across different product groups, which results in possible cost distortions. The feeling from participants is that despite ABC and its accuracy relating to product costs, it can create problems that may need to be considered when applying ABC in a diverse organisation.

The general feeling from participants is that ABC would be more beneficial to larger organisations and that smaller organisations simply would not care enough to investigate every single costing element. A diverse portfolio along with complexity levels were mentioned as key factors in the importance of ABC and the additional benefit that would be obtained from implementing ABC.

It was established that greater benefit with ABC than with TC is more likely if the organisation is larger and more complex, and the product range is more diverse. This is consistent with past research (Baird et al., 2004; Brierly, 2008; Hutchinson, 2010; Mullins & Zorn, 1999; Raeesi & Amini, 2013; Rundora, Ziemerink & Oberholzer (2013)), and confirms that organisations should consider this as a factor during the assessment phase.

Objective 2: The intensity of ABC usage as a factor in ABC implementation success

- **The use of ABC in capital investment decisions**

Identifying key drivers from ABC assisted most participants in making capital investment decisions. According to participants, inefficiency in certain processes can be identified and profit margins can be increased. In addition to increased profit margins and volumes, it was noted by participants that ABC identifies inferior quality, and this enables new machinery to be bought knowing that the correct decision was made. Therefore, it is plausible that capital investment decisions with ABC could additionally be enhanced with ABM and TQM by identifying machines relating to activities which do not perform to the required standard anymore.

According to participants, important facts identified in the use of ABC in capital investment decisions, is the need to conduct time studies. As the use of new power stations such as Madupi comes with promises of increased outputs, reduced cycle times or additional business, it was stressed by participants that for ABC to be used with capital investment projects, it is important to conduct time studies to derive at standards for future comparison. A prominent issue derived from the interviews is the use of evaluation of products right through their respective life cycles to establish variances from the actual costing. If ABC has

been used as an initial decision-making tool for these capital investment decisions, the activity variances can be compared with initial estimations.

Although the majority of participants were in favour of ABC being used for capital investment decisions, one participant was not convinced. You do not make capital investments based on ABC. You need to look at the big picture, look at the potential and then manage the operations around that. Tsai, Chen H., Liu, Chen, S and Shen, Y (2011) and Lind (2001) established that there is a significant difference in Net Present Value (NPV) between ABC and TC, and it seems that most participants would consider ABC important for capital investment decisions.

- **Using ABC in budgeting and forecasting**

On the topic of budgeting and forecasting, participants had a fairly varied view on how it should be conducted in relation to ABC. While most would agree that it is advantageous for the organisation, it was sometimes mentioned as problematic. This was associated with changes in volumes and product mix combined with inflexibility in production shift patterns. A problem highlighted by a participant was the sharing of resources between business units. This creates a problem for efficiency between business units that has to carry the inefficient business unit. ... *it's difficult to sometimes explain to someone getting emotional about it and, as I say, there's arguments about why am I paying for his underperformance? This comes up at least twice a year, I would say.*

Another aspect of ABC budgeting and forecasting that is recommended by participants is that cost allocations should be made by following clear guidelines and not changing the techniques constantly. According to participants, activity cost drivers should be measured prior to the budget process to enhance comparability with actual numbers. The use of comparability to ensure good control of business has been cited by some participants as important. This can be assured only by using the same methodology used for actual costs; therefore, if ABC is used as a costing methodology in order to achieve comparability, it has to be used for budgeting and forecasting purposes as well. Although some elements of the budget are attempted as a zero-based budget, it is generally felt that producing a complete zero-base is not practical in the real world and that certain fixed costs

will be carried over, presumably as a result of not using ABC to apply those overheads.

- **The link between ABC value-adding and a better understanding of product profitability**

The importance of ABC in being able to provide profitability information on different hierarchical levels was considered very important by participants. Nolan (2004) illustrated the benefit of using hierarchical analysis to identify profitability on different levels. The key for Eskom is to be able to identify those electrical plants that provide good margins and focus on increasing volumes if possible. While it is not always possible to decide on product mix decisions due to customer demands, and electricity can't be stored, participants stressed that it becomes even more important to know which products are not-profitable and to be able to continuously monitor these problematic products with ABC.

ABC was promoted as beneficial when it could be used as a measuring instrument against set standards by investigating activity costs against historical costs and by comparing actual activity performance with time studies. Some mention was made that monitoring and understanding these activities across the entire value chain are beneficial to the organisation. This practice of ABM (Armstrong, 2002; Kumar & Mahto, 2013) is believed to provide management with a diagnostic tool, a view that is reflected by Participant [2], who emphasised the importance of being able to monitor costs. *I think as a lean organisation, you recognise that systematically you have got to control it, you can't put people in to monitor your costs so you have got to develop an activity-based costing system that gives you at least up to a certain level again an immediate measurable result that you can monitor the organisation by.*

The use of the TC system was not advised by participants. They explained that accuracy would suffer as a result, and explaining variances would become problematic. The inability of TC to truly differentiate between good and bad contributors could result in focusing on the wrong product lines or areas. This is supported by Cokins (2002), who suggested that the use of TC will provide cost

distortions with increased overheads, and by Plowman (2001), who suggested that product mix decisions can be better made with the use of ABC.

Objective 3: ABC and pressure on company resources and time

- **The extent of ABC usage and practical issues preventing ABC from reaching its potential**

The majority of participants agreed with past literature (Armstrong, 2002; Kaplan & Anderson, 2003) that ABC should be practical enough to operate. The majority of participants indicated that grouping activity costs or applying arbitrary percentage costs in shared lines is often necessary and practical. Activity cost driver rates involving similar equipment are mentioned by participants as a means of simplifying the ABC process. Often cost driver standards are applied across the entire organisation where these cost drivers are well understood and easily measurable.

It was also noted by one participant that if cost drivers are not properly understood, this would create difficulty in setting a competitive pricing strategy. Some participants were of the opinion that a combination of ABC and TC is ideal to identify problem areas without complicating activity cost monitoring. *There has to be a happy medium between analysing things to death, every drop of oil that you use on a part and just going ... thumb sucking your way through business, you can't do that either.*

An issue that prevents the accuracy of ABC is the matter of input factors in the ABC system. It is believed that during pressure times mistakes are made and due care is not necessarily taken to ensure that data used for cost driver activities is accurate, contributing to incorrect cost information. *... then the answers start coming through that yes but we don't always book the hours as accurately as we should be.* The overriding impression that the researcher received from participants is that ABC is applied to what the organisation felt was practical at the time, although some participants were keen to intensify their use of ABC/ABM but were prevented from doing so by lack of resources and skills.

- **The extent to which manufacturing overheads can be attributed to products by means of activity cost drivers**

Assigning manufacturing overheads by attempting to identify all possible cost drivers was not considered to be a value-adding process. While participants were generally in agreement that ABC provides a more accurate costing method, the extent to which overheads should be applied should not exceed what is reasonably practical or where there is no obvious relationship between product and overhead.

The general observation by the researcher was that participants felt that excessive overhead allocation creates frustration and that cost drivers should be selected to a point where this can still be practically linked to a certain type of electricity. ABC becomes problematic with changing resource demands, especially if the ABC costing model does not consider drastic changes in volumes. According to participants, the practicality of cost driver allocation may also extend to the lack of resources and the need for experts to identify these cost drivers. This confirms findings from past literature that larger organisations with greater resources are likely to be able to implement ABC more successfully (Brierly, 2008; Elhamma, 2012; Hall & McPeak, 2011; Nassar, Al-Khadash & Sangster, 2011; Raeesi & Amini, 2013; Rundora et al., 2013).

Practically, the allocation of resource costs for shared resources for different products remains problematic and is often treated as an arbitrary cost allocation. In summary, although the allocation of manufacturing overheads is ideally done as comprehensively as possible, there is a limit to identifying cost drivers, a view that is aptly supported by most of the participants.

- **The extent to which indirect fixed overheads can be attributed to products by means of activity cost drivers**

Most participants also noted that, although some portion of fixed costs should be allocated to the product, it remains a cost that will be incurred regardless. The general perception that costs are carried by all products with no weighting seems to add to the negative perception of participants in this particular area. While indirect overheads relating to administration costs are generally not considered,

according to participants and past literature (Sartorius et al., 2007), there are attempts to allocate semi-direct costs such as warehousing costs by means of a specific driver, although the driver rate is not specifically measured.

Some participants indicated that if the fixed cost structure was to change, this should be considered in the ABC costing model. The view obtained from participants was that ideally ABC should be able to provide as much information as possible and that comparability with standards and budgets increases value-adding with ABC. Although ideally all costs should be treated as variable, in practice this may not always be possible and there may be areas where no working solutions can be found. In general, indirect fixed overheads are excluded from ABC costing models, with the possible exception of drastic changes in the fixed overhead structure, especially if the additional fixed overheads can be attributed to additional business.

Objective 4: ABC support structures as an enabling factor for fulfilling its potential

- **ABC and the link with other quality and cost-saving mechanisms**

ABC was closely linked to other cost-saving mechanisms by the majority of participants. Although technical knowledge surrounding these cost mechanisms was generally lacking, there were two prominent issues that emerged from the interviews with regard to ABC and supplementary cost-saving techniques, namely the issue of tracking operational efficiency and TQM. Equipment maintenance tracking was often mentioned as a mechanism that enables ABC to identify inefficient activities. The use of a separate engineering tracking module was cited as a means of identifying actual activity costs, which in turn provides the possibility of comparing with observed activity times. This is consistent with past research that established that lean manufacturing supports ABC by focusing on improving inefficient activities (Fullerton & Wempe, 2008; Jelsy & Vetrivel, 2012).

Cohesion between the engineering and finance departments resulting from frequent update meetings on process efficiencies were deemed to be important by one participant.

- **Support from management and operational staff and its effect on ABC**

Participants suggested that lack of support by management has left finance teams with the entire decision-making with regard to ABC. There is a general expectancy by management that they will provide the resources and that finance has to somehow coordinate the process. One participant pointed out that, in order to achieve desired results, management tend to provide more labour and resources with no consideration for cost savings which are still ultimately expected.

The lack of support from management, perhaps due to their lesser involvement, might have led them to not really understand the dynamics surrounding the organisation's product costs. These findings confirm findings from past literature suggesting that lack of management support may negatively influence the successful implementation of ABC (Govender, 2011; Sohal & Chung, 1998; Xu, 2012).

This research confirms findings from Xu (2012) which suggest that lack of inter-departmental support may hinder ABC implementation. Some mention was made of the reluctance of production staff to cooperate on costing matters as they perceive their job to be the production of volume and they do not want to be involved with the detailed aspects surrounding costing. In summary, the lack of support from management and operational staff is considered a hindrance by some participants, who occasionally cite as a reason the lack of knowledge of the importance of ABC; this will be investigated further in the next sub-theme. Nassar et al. (2011) and Velmurugan (2010) suggested that the negative perception by general users may be due to the lack of training and that knowledge may increase the user's confidence in the ABC system.

- **The importance of ABC training and analytical skills to ABC success**

The importance of training all users in ABC was stressed by participants during the interviews. It was noted by participants that operational staff need to be able to understand how all the processes affect each other, and that to be proficient in only one area is not going to help with the successful implementation of ABC.

A key challenge identified was to get operational staff not only to understand the dynamics surrounding ABC, but also to realise the importance of correctly applying ABC. Incorrect analysis could cost organisations money, as one participant noted.

Past literature suggested training is a factor having a significant impact on the successful implementation of ABC (Govender, 2011; Khozein, Dankoob & Barani 2011; Nassar et al., 2011; Velmurugan, 2010; Xu, 2012; Yapa & Konchange, 2012). Hence training may be an important consideration for ABC adopters in the manufacturing industry. The final sub-theme discusses the effect of IT systems on ABC implementation success.

- **The effect of IT/ERP systems on ABC success**

Using a proper Enterprise Risk Planning (ERP) system was identified by participants as important in analysing ABC. The use of separate accounting and operational systems is not considered to be ideal as accounting information cannot be related back to operational performance. The study of Al-Sayed, Abdel-Kader & Kholief (2008) found that using a mixture of IT packages was the most popular strategy. The majority of participants in this study used a combination of ERP systems and spreadsheets. Their perception is that this provides them with the integration of the ERP system and the flexibility of spreadsheets.

4.8 Summary

In Chapter 4 the results from the semi-structured interviews as well as the focus group interview were discussed. These objectives related back to past research that enables the researcher to achieve the research objectives. It was found that ABC becomes more critical although problematic with greater complexity and product diversity. The use of ABC also becomes more problematic as complexity increases. The common practice for organisations is to extend their overhead allocation to a point of no relationship between overhead and product. It was established from the literature review that ABC is enhanced when combined with activity-based budgeting and forecasting. The use of standards was deemed to be important, both by literature and amongst participants. In addition it was deemed to be important to use zero-based budgeting in the majority of overheads although

it is not always practical. Other cost-saving mechanisms support ABC by providing information on inefficient activities and focusing on continuous improvements.

4.9 Conclusion

The results for this study reflect the statement of Garrison and Noreen (2000:25) that the active support of top management is the most crucial factor in the success of ABC and ABM. Furthermore, Gurses (1999:9) confirmed 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 used 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 important role 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) stated 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 implementation of quality management programmes with costing systems, not only identifies wastage, but also develops methods to value and eradicate it.

CHAPTER 5

DISCUSSION, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

The results of the research in the previous chapter has a direct correlation to the implications of these results that are now discussed in the light of the literature reviewed in the first few chapters of this research. Limitations in the research are identified and future research areas are also presented.

Turney (1991:44) posited 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 study emphasised the importance of quality information and proved that ABC and ABM are useful tools providing management with the information for effective decision making for improved business performance.

The quality of management decisions can be directly linked to the quality of information. According to Glad and Becker (1994:219), organisations need information about the financial consequences of intended actions as a guide for planning and choosing among alternatives. 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 interrelates well with strategic planning to produce products of higher quality, cost-effectiveness and overall customer satisfaction.

The main objective of this research was to understand the factors that have an influence on the successful implementation of ABC. In order to achieve this objective a literature review was conducted, as reported in Chapter 2 and Chapter 3. In order to confirm the findings from research, a qualitative study was conducted by means of semi-structured interviews with 25 participants working in Eskom Free State Distribution Centre as well as focus group interviews with employees in the finance division. The research was conducted in this manner to ensure open-ended responses from participants and to investigate participants' perceptions of

factors they considered important for ABC implementation success. A quantitative study was also employed by distributing questionnaires to Eskom employees. The results of these are discussed in Chapter 4.

5.2 Findings

Based on the concluded research, it may be important for an organisation contemplating implementing an ABC method to be aware of the factors that enable ABC to be a success and justify the additional cost and resources necessary to implement ABC. Accordingly, the following conclusions can be drawn from the research:

- Although top management has provided adequate resources to make the implementation of ABC possible, the perception of the respondents are that top management failed in giving active support to the implementation of ABC.
- The results also indicate that all the involved parties are committed to the implementation of ABC. ABC has also not succeeded in breaking down the barriers between the functional divisions. Working together as a motivated group has not resulted from the implementation of ABC.
- The findings further revealed that training and education is not applied satisfactorily to make the implementation of ABC a success
- It was also evident from the findings that the respondents did not perceive that they were adequately remunerated or shared in the benefits of ABC implementation.
- The high cost of implementing ABC does not outweigh the lack of software packages, the lack of data requirements and cooperation between departments.
- ABC implementation success may be more likely in larger, diverse manufacturing organisations, especially with multiple cost drivers/activity drivers.
- Competition may play a large role with regard to ABC implementation success in manufacturing organisations, especially if ABC is used to combat competitors' pricing strategies.

- The use of ABB and ABM may enhance ABC implementation success in manufacturing organisations by providing comparability with standards and managing activity costs.
- Capital investment decisions using ABC in manufacturing organisations may ensure that the correct decisions are made and provide a basis for comparability throughout the product life cycle.
- The likelihood of ABC implementation success in manufacturing organisations may be increased with greater identification of cost drivers for manufacturing overheads.
- Excessive identification of indirect fixed overheads may be detrimental to ABC implementation success in manufacturing organisations due to possible time and resource constraints.
- Positive user attitudes and management support may enhance the successful implementation of ABC in manufacturing organisations.
- The identification of the correct ABC software prior to ABC implementation may increase the likelihood of ABC success in manufacturing organisations.

This concludes the findings from past literature and the empirical study.

5.3 Recommendations and motivation of the research

This paper revealed that the model of ABC can be used in every type of organisation. It has been successfully implemented and used by many large companies like industries, institutions, or the public sector.

The following recommendations should help Eskom to have a higher rate of success while implementing ABC:

- Active management support is crucial in the successful implementation of ABC.
- Apart from providing all the resources and means of implementation, commitment is very important. Eskom should not only make sure that all the relevant parties are committed, but also that they are motivated to work together as a group to achieve the goals of the company

- Training is a most important factor as it helps the employees to understand how ABC differs from traditional cost accounting.
- It was also evident from the results that in the cases where accountants retained ownership and did not share it with other parties, like the non-accountants, the ABC implementing experience was not successful.
- The activity-based costing implementation revealed numerous organisational changes, which resulted from the process of implementation, such as closer connection between management accounting and other operational functions. ABC and any other costing system are not static; it can be established, therefore, like organisational change and business conditions.
- ABC needs to be updated and maintained.
- In transferring its clear picture, ABC has ability to make champions of individuals of specific goods or services.
- Activity-based management methods have a broad range of uses, permitting the empowering usage of ABC information for a wide variety of company functions and operations such as process analysis, strategy support and time-based accounting, monitoring wastage, as well as quality and productivity management.
- ABC provides information for strategic decisions, such as product mix and sourcing decisions that is consistent with the long-run nature of these decisions within Eskom.
- ABC allows product designers to understand the impact of different designs on cost and flexibility and modify their designs accordingly.
- ABC supports the continuous improvement process by allowing management to gain new insights into activity performance, by focusing attention on the sources of demand for activities and by permitting management to create a behavioural incentive to improve one or more aspects of manufacturing.
- ABC is a tool for managing complexity in manufacturing. ABC provides activity-based information to help managers understand and eliminate complexity. It is also a communication tool between production and

marketing, and product design, that helps minimise product changes which create unnecessary complexity.

- The ABC designer can use the rules of ABC design to simplify the system without sacrificing the accuracy of product cost. A well-designed ABC system will also have no more detail than that required by the manufacturing environment.

5.4 Conclusion

In conclusion, it seems that there is no standard template for achieving benefits from ABC and that it would differ between organisations. In short, success with ABC may be achieved by leveraging organisational resources to the extent to which ABC remains practical and not according to some individual's idealistic views.

It is evident from the questionnaires that participants realised the important role of ABC in cost reduction. The same could not be said about continuous improvement, as ABC was deemed by most to not contribute towards continuous improvement.

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