

Developing an activity-driven costing framework for a South African cash services company

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Dedication:

This dissertation is dedicated to the memory of my father, we miss you every day.

ABSTRACT

TITLE: Developing an activity-driven costing framework for a South African cash services company

KEYWORDS: Activity-based costing, activity-based management, time-driven activity-based costing, activity, activity driver, cost driver, cash services and South Africa

Globalisation has increased market accessibility for foreign entrants to local markets, and technological advances have rapidly transformed business environments. This has intensified the need for accurate and relevant financial and non-financial information, to provide managers with information to identify and eliminate non-value adding activities and loss-making products. To be competitive, companies must reduce product and services costs without adversely impacting quality. Accurate product costing has become key for companies' survival.

Company A, the selected case study, is a leader in the South African cash services and solutions industry. Its objective is to defend its position of being a prominent player in the industry and, as a result, it is under pressure to optimise its processes and to reduce costs. To achieve the above, Company A needs to understand its resource consumption so as to allocate overheads accurately. An activity-driven costing framework is developed to provide accurate and reliable information on product costs by accurately identifying and assigning overhead costs to products and services.

The traditional costing system (TCS) and the activity-based costing system (ABC) were compared and contrasted. The study found that the popularity of TCS rested on its ease and cheapness to manage, as it uses a single cost driver such as direct labour to allocate overhead costs. The use of a single cost pool, however, led to products and services costing and pricing distortions. It also did not offer management much in terms of optimising cost usage, reducing process inefficiencies and ensuring quality management.

ABC prevents product and services costing errors by adopting multiple cost pools and cost drivers to reallocate business support services. It allows companies to get a good

approximation of the total real costs of products, services and unused capacity. ABC, however, monthly requires considerable resources to collect and process the data, which includes interviews and the preparation of management reports.

To correct this shortcoming, time-driven activity-based costing (TDABC) was developed. It is quicker, cheaper and simplifies the costing process by eliminating the need to interview and survey employees for allocating resource costs to activities. TDABC only requires the calculation of the cost of providing resource capacity and the capacity cost rate to drive departmental resource costs to cost objects, by forecasting the demand for resource capacity (typically time) that each cost object requires. It was due to these benefits that the costing framework developed for Company A was an activity-driven one.

To answer the problem question, namely whether the development of an activity-driven costing framework would lead to improved product pricing and costing decisions in Company A, TDABC was compared to the current TCS in use. Comparison of the two methodologies revealed that, under the current TCS, there is cross subsidisation between the two departments. This has resulted in products being inaccurately priced and thus uncompetitive in the market.

By implementing TDABC, the management of Company A can obtain a better understanding of the rate of consumption of business support services resources. Company A can have more precise information to accurately cost products and services. This information leads to better resource planning, elimination of waste and enlightened management decision making.

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CHAPTER 1

1 INTRODUCTION

1.1 Background

Global competition and technological advances have prompted changes in the business environment, these have led to innovations in the use of financial and non-financial information in organisations (Cardos & Pete, 2011:152). Innovations in manufacturing and communication technologies have radically changed the ways organisations conduct their activities (Zhang & Che, 2010:144).

According to Özbayrak, Akgün and Türker (2004:49), increasing competitiveness globally has forced organisations to pursue to produce high quality products more speedily and at a competitive cost. In order to achieve these goals, organisations must become more flexible, integrated and highly automated.

Responding to the above changes in the business environment, researchers and organisations are constantly re-evaluating managerial accounting by developing improved systems and techniques of cost allocation. Management accounting is a tool to assist in decision making, plans formulation and operations control (Mahal & Hossain, 2015:66).

To achieve or maintain competitive advantage, companies are forced to embrace new strategies and implement more complex costing systems to keep track of product and services costs and quality. Cost and quality have become differentiating factors, giving companies an advantage over its competitors (Özkan & Karaibrahimoğlu, 2013:420).

The measurement of success of any organisation requires the appraisal of its operations and processes, such as the quality of its products and services, its operational proficiency and its ability to manage costs (Naidoo, 2011:109).

Developed in 1988, activity-based costing (ABC) aims to provide accurate information about the cost of resources consumed by individual products, services and consumers (Cardos & Pete, 2011:153). This costing method could lead to improved decision

making as a result of enlightened product-cost information and improved understanding of activities that leads to overheads and greater accessibility to relevant costs for a wider range of decisions (Wessel & Shotter, 2000:216).

ABC was simplified by Kaplan and Anderson (2003) with the introduction of time-driven activity-based costing (TDABC). TDABC captures more variation and complexity, providing the same high quality information. TDABC can provide quality information on customer and channel profitability by reflecting the cost differences between low-demand, simple-to-service customers and high-demand, complex customers (Barndt, Oehlers & Soltis, 2015:27).

1.1.1 History of ABC

Traditional Costing Methods (TCM) were developed to use direct labour as an overhead cost allocation driver, as labour was normally the biggest cost of production. TCM has generally been popular due to its relative ease to apply. Products and services with higher direct labour hours were allocated more overhead costs. This system worked well for organisations that manufactured large volumes of a few products and/or had immaterial overhead costs (Popesko, 2009:38).

The global business environment has rapidly changed over the last decades, product ranges have increased, direct labour costs have decreased and overhead costs have increased significantly. For these reasons, organisations that continue to use traditional overhead absorption techniques are likely to make inaccurate cost management decisions that could possibly be devastating (Sartorius, Eitzen & Kamala, 2007:2).

The concept of ABC was initially introduced in the manufacturing sector. However, Ashford's (2011:3) research found that ABC gives a horizontal and cross-functional view and provides a fact-based awareness into spending and profitability of not only products, but of services and customers as well.

As the level of diversity of products and services has increased over the last several decades, TCM has become even less reliable due to its imprecise overheads allocation. This weakness resulted in organisations using incorrect costing information

when pricing products and services, and as a result in making adverse decisions that had unfavourably affected their competitive position. This has resulted in the development of alternatives, such as ABC (Cardos & Pete, 2011:154).

As mentioned before, ABC was developed by Cooper and Kaplan to address deficiencies associated with TCM, which includes being incapability to accurately determine actual production and service costs, or to give useful information for operating decisions (Cardos & Pete, 2011:154).

The objectives of an ABC system, according to Rundora, Ziemerink and Oberholzer (2013:488), are to assign costs according to activities consumed, to create visibility in the overhead costs area, to provide better information for control purposes, and to improve all operating activities.

According to the Chartered Institute of Management Accountants (CIMA), ABC is more than just a system; it is a management process. It tracks and provides costing and operating information that mirrors a horizontal view. Being activity-driven, it gives useful information by introducing cost drivers and performance measures to initiate, motivate or support development efforts and to lead to better decision making (CIMA, 2001).

The purpose of ABC includes the prevention of cost distortion, which occurs due to TCM placing all indirect costs into a single cost pool. ABC prevents this by utilising multiple cost pools and drivers. ABC also aims to reduce waste and non-value adding activities by providing a comprehensive process view (Mahal & Hossain, 2015:66).

In turn, Kaplan and Anderson (2003:15) found that using the unit cost of supplying capacity was quicker, easier and less costly. In their research, the estimation of the practical capacity of committed resources and their costs provided more visibility to process efficiencies and capacity utilisation. It was these characteristics that have made TDABC gain favour.

The next section presents the literature review on the research topic.

1.1.2 Literature Review

The literature review is split between research conducted on ABC, activity-based management (ABM) and the benefits and challenges of ABC. In Chapter 3 (refer section 3.7, page 44) a presentation on the emergence of TDABC is provided.

ABC has attracted interest from organisations' management accounting professionals and academics since its introduction in 1988 in response to problems experienced with TCM (Phan, Baird & Blair, 2014:787). Claims that the information delivered by ABC improves the accuracy of product and service costs have been supported by a wide range of studies done globally (Mahal & Hossain, 2015; Özkan & Karaibrahimoğlu, 2013; Phan *et al.*, 2014; Rundora *et al.*, 2013; Sartorius *et al.*, 2007; Wessels & Shotter; 2000; Zhang & Che, 2010).

Özkan and Karaibrahimoğlu's (2013:420) research in Turkey found that customer satisfaction was interlinked with gaining and maintaining competitive advantage. To increase customer satisfaction, organisations must balance product quality and cost. Their research found that TCM accounting systems failed to provide accurate cost of providing quality products or services that lead to customer loyalty and retention. Precise information necessary to accurately classify and measure cost of quality was produced by ABC, as this accounting method properly allocates activity costs over product/services (Özkan & Karaibrahimoğlu, 2013:420).

ABC was proven by Srinivasan (2008) to have made a costing system meaningful. The research found that ABC users obtain a good approximation of the total costs of products and services and in turn identify idle capacity. It allows flexibility and simply flows with the processes and activities. The study added that ABC gives clear visibility of which products are the most profitable and which are the least profitable. The research continued to argue that ABC aids in identifying expensive activities that can be targeted for remodelling, and lastly helps management to recognise the cost trends of an organisation and sectoral trends to invest in research and development for better products at different costs.

A study of the implementation of ABC at Nestlé Bangladesh Limited added the following benefits to ABC costing: improved pricing, marketing, product design and

product mix, as well as identifying non-value-adding activities and weak product lines. The implementation of ABC at Nestlé Bangladesh assisted marketers in cost estimation used in pricing. It directed marketers how far to adjust in negotiations, to yield substantial cost reductions and to indicate areas for improvements in operations to allow better satisfaction of customer wishes (Mahal & Hossain, 2015:71).

ABC is not a standalone system, but it is part of an activity-based management (ABM) system - according to research by Phan *et al.* (2014:787). ABM is defined by the Consortium for Advanced Manufacturing-International (CAM-I) as a discipline that concentrates on the management of activities with the aim of enhancing value received by customers and the profit realised when providing such a value. CAM-I further adds that ABM concentrates on how to improve and redirect resource usage to increase the value add for customers and all other stakeholders (Cardos & Pete, 2011:158).

Research by Phan *et al.* (2014:787) found that many more companies use one of the three hierarchies of ABM to understand resource consumption. First on the hierarchy is Activity Analysis (AA), which recognises activities and procedures performed to transform resources into outputs. Secondly is Activity Cost Analysis (ACA), which recognises costs and cost drivers of each activity. The third and final level of ABM is ABC, which traces activity costs to products and services to allow for a more precise measurement of product and service cost (Phan *et al.*, 2014:788). Organisations seem to implement ABC intensively enough to identify the exact nature of their overheads with the intention of gaining a competitive advantage (Reynolds & Van der Poll, 2015:126).

Phan *et al.* (2014:787) examined the relationship between an organisation's life cycle (OLC) stages and the extent of its use of ABM. The research found that the life stage of an organisation does indeed play a role in the selection of which level on the hierarchy an organisation chooses to implement ABM, and to what extent.

Phan *et al.* (2014:788) identified five OLC stages. The first being the birth stage. At this level organisations are smaller in size and are characterised by little product diversity but high emphasis on marketing and distribution. The second OLC stage is the growth stage in which organisations are focused on expanding and diversifying of

product lines. The third and fourth are the maturity and the revival stages respectively. Organisations in the latter stages are bigger in size and are relatively in a stable organisational environment, with higher levels of competition and a much more formal and centralised structure (Phan *et al.*, 2014:789).

Business units in decline, which is the fifth and final stage, are greatly centralised, lacks a substantial strategy and - as a result – weighs minimal amounts of information when making decisions. Phan *et al.* (2014:796) concluded that birth stage organisations use all three levels of the ABM practice (AA, ACA and ABC) to a significantly less degree than mature and revival organisations.

Mahal and Hossain (2015:71) studied disadvantages of ABC that have resulted in fewer than anticipated companies implementing the system. The cost and complexity of ABC implementation, compared to TCM, was at the top of the reasons provided. ABC provides much more data than TCM which, if no proper training is given, could result in misinterpretation. Lack of support from management and end-users resulted in organisations quickly regressing back to TCM.

A South African study by Wessels and Shoter (2000:221) identified factors responsible for successful implementation of ABC. These factors being management support, adequate employee skills/resources and coherence of the ABC implementation with the organisation's set goals and culture. The findings of the study are important in the implementation stage of this research, as it assists in anticipating common obstacles.

Supporting the above findings is research done by Sartorius *et al.* (2007:3) that found that the above critical success factors were key not only in a South African context, but in developed countries' implementation of ABC as well. The researchers further added that the ability of an organisation to link its performance appraisal to ABC, as well as a proficient training of users is key to the successful implementation of ABC.

A study by Rundora *et al.* (2013:485) investigated experiences and perceptions of small South African manufacturing firms based in south Gauteng province to the use of ABC as an alternative costing method. The study found that ABC users had been longer in business and these businesses were larger in size than non-users. The

study also found that some barriers impeding the adoption of ABC were found to be either individual, organisational or environmental. Barriers for individuals are related to anxiety around the unknown or change of the status quo, possible loss of status or a need to learn a new skill. Organisational barriers are associated with territorial as well as corporate culture issues. And, lastly, environmental barriers are put up by stakeholders of interest such as regulatory agencies and employee groups (Rundora *et al.*, 2013:489).

Zhang and Che's (2010:145) study added that organisational factors such as top, controlling managements' support, relevance, training, connection to performance appraisals and compatibility with the existing system were key to the acceptance of ABC. The study identified four stages to the implementation of ABC: initiation, adoption, adaptation and acceptance (Zhang & Che, 2010:145).

There is clear evidence from the above literature that ABC has been studied extensively across numerous countries, at organisations' different life cycles, in various industries and implementation at different levels of the ABM hierarchy. Benefits and challenges have also been researched in depth. What has become evident is that no research has been conducted on the development of an activity-driven costing framework for a South African based cash services company. This research aims to fill this knowledge gap.

1.1.3 Motivation of topic actuality

This research aims to deliberate on the benefits that could flow to a company as a result of changes in its overhead allocation, benefits including accurate product and costing decisions. This has been triggered by the belief that the current TCS does not empower managers to be able to evaluate the effectiveness of resource allocation. As a result, organisations' successful adaption to a changing environment that is needed for survival, is hindered.

A cash services company, from hereto referred to as Company A, is the case study selected for this empirical study. A cash services company offers solutions and services to keep cash safe and efficiently rotating in the retail and banking systems.

Company A has had a monopolistic advantage over South Africa's cash services industry due to the high capital requirement to enter the market. This has been a significant barrier to market entry for over three decades. However, globalisation, a weaker South African Rand against major international currencies and stagnant growth in developed markets have seen international and well established players enter the South African cash services market.

In an effort to defend its position as the local prominent player, Company A is under pressure to optimise its processes and reduce costs. Accurate product costing has become even more important if the company is to remain cost relevant in the industry. For Company A to manage costs, they must identify and eliminate non-value adding activities and loss-making products. It needs to turn around relationships with customers that are not as profitable.

Overhead costs are currently being allocated by Company A's costing department to products using volume numbers. This cost allocation model is being used due to minimal understanding of the business's cost drivers and the ease of implementation. The inaccurate allocation has resulted in erroneous product pricing and costing decisions. An increase in product lines, previously thought to be profitable, are resulting in staggering financial losses.

The motivation for the research was therefore to develop an activity-driven costing framework that generates accurate and reliable information on product costs by accurately identifying and assigning overhead costs to products and services. A framework is a conceptual structure intended to serve as a guide for building a costing system for Company A. The system must enable management to make correct decisions based on relevant and up to date information about processes and products.

Company A aims to optimise efficiencies in the cash supply value chain by reducing the costs of cash cycle servicing and increasing its purity; ensuring high levels of efficiency of banknote and coin processing; maintaining high security standards, and improving the quality and authenticity controls over banknotes and coins in circulation.

1.2 Problem Statement

As Company A has been a major provider of cash services for the South African market, it resulted in the company showing inefficiencies associated with monopolies. Being a monopoly meant that Company A could set prices that were higher than both marginal and average cost, encouraging even further production inefficiencies. The entry of new players resulted in customers now having alternative service providers and no longer being price-takers. Company A is now forced to produce efficiently and to reduce costs without adversely affecting quality.

The question can therefore be asked: would the development of an activity-driven costing framework lead to improved product pricing and costing decisions in Company A?

ABC, if properly implemented, can serve as a powerful tool for continuous improvements of products and services. Benefits to Company A could be achieved through process design simplification, as well as through the elimination of unproductive, inefficient or redundant activities. Anticipated cost savings and cost avoidance that will be as a result of the implementation of the framework, will safeguard the survival of Company A and could ensure it remains a serious contender in the industry.

1.3 Objectives

The research aims to achieve the following objectives:

1.3.1 Main Objective

The main objective of this study is to develop an activity-driven costing framework for Company A, a South African cash services company. This framework's objective is to allocate overhead costs more accurately and reliably than the current TCM model, thereby leading to improved product pricing and costing decisions.

1.3.2 Secondary Objectives

The following secondary objectives supports the achievement of the main objective set above:

- Development of an appropriate research methodology to meet the above set research objective (Chapter 2);
- Reviewing the existing literature on the fundamentals of cost allocation, TCM and ABC and the emergence of TDABC (Chapter 3);
- Developing an activity-driven costing framework for Company A, the case study, to ensure improved product pricing and costing decisions (Chapter 4); and
- Concluding the research by providing recommendations based on the findings of the empirical study and substantiated by the literature review (Chapter 5).

1.4 Research Method

Objective of a research design is to articulate procedures used when conducting a study, and its main purpose is to help find answers to research questions (Mouton, 2015:49). This study was conducted in two phases, being the literature review and an empirical study.

1.4.1 Literature Review

A literature review is defined as the study of existing research conducted by scholars to understand how they have investigated and solved a defined research problem (Mouton, 2015:87). The aim of this study's literature review is to identify existing knowledge and research conducted in the ABC field.

The main sources of information for this research are relevant books, academic journal articles, subject-specific magazines, internet sources, relevant dissertations and theses. The foundation is based on the theory of ABC and the documented methods of implementations.

1.4.2 Empirical Research

Researchers adopt either a qualitative, a quantitative or a mixed (or multi) method mode of enquiry. This research follows a qualitative approach (Ivankova, Creswell & Plano Clark, 2016:312).

To achieve the above set objectives, a case study approach was followed. Company A, a cash services company, has been selected as the case study subject.

Semi-structured face-to-face interviews were conducted to gather qualitative data. Interviews were held with relevant stakeholders from Company A, including representatives from finance, costing, planning, operational and support office management. The selection criteria for the respondents was those with an understanding of, and being able to influence how business support services (overhead) costs are being incurred in Company A. Interviews with the above-mentioned key players, as well as system end-users, were conducted and analysed. The aim with the interviews was to document and describe Company A's centralised business support services departments and to gain an understanding of the cost drivers of each department. Furthermore, information on departmental activities and resources consumed was gathered.

Content analysis was utilised to collect data from Company A's enterprise resource planning (ERP), management reports, external stakeholder reports and any internal information systems. Information was gathered to obtain a better understanding of what the current status of costing is. The objective was then to develop an activity-driven framework, based on ABC principles that Company A could utilise going forward.

A comparison between the current costing system (TCM) and that of the newly developed activity-driven costing model was evaluated.

1.4.3 Paradigmatic assumptions and perspectives

The results of this research includes data resulting from semi-structured interviews with topic-relevant professionals. The results also include calculations and a comparison of systematic data between the ABC methodology to be implemented by

Company A and the currently used TCM methodology. This results in a combination of positivism and interpretivism.

Positivism is an objective view of a common, individual reality with positivists believing that anything that can be seen is real and that reality exists independently of human thoughts and perception (Bisman, 2010:8). Interpretivists on the other hand, assume a more personal and flexible research structure and attempt to make sense of what is perceived as reality. Interpretivism therefore embraces multiple realities, and have multiple perceptions about a single, mind-independent reality (Bisman, 2010:12).

Bisman (2010:13) found that qualitative, naturalistic methods provide richness, density, depth and the contextual entrenching of data. Quantitative approaches allow for the valuation of the capacity for a wide-ranging applicability of patterns observed in data, these approaches include those utilising certain forms of statistical analysis,

The aim of the combination of qualitative and quantitative methodologies is to utilise the strengths of each methodology whilst mitigating the individual weaknesses. Methods used in the research to collect data emerge from both streams, i.e. by semi-structured interviews and from analysing quantitative data.

1.5 Key Concepts

Activity-based costing (ABC): This methodology was first introduced in 1988 by Cooper and Kaplan. It identifies cost pools or activity centres in an organisation, thereafter it allocates indirect costs to cost drivers based on the number of each activity used (Akyol, Tuncel & Bayhan, 2007:136). Based on these cost drivers of activities, indirect costs are allocated to cost objects such as finished products, services and customers proportionately (Szychta, 2010:50).

Activity-based management (ABM): ABM uses ABC data to better manage product portfolios and to enhance business processes (CIMA, 2001:2). Business excellence is supported by ABM as relevant information is provided to assist long-term strategic decisions about product mix. ABM also supports continuous improvement as management will gain new insights into activity performance (CIMA, 2001:3).

Time-driven activity-based costing (TDABC): TDABC allocates resource costs straight to cost objects using two sets of estimates: the capacity cost rate for the department and the capacity usage by each transaction processed in the department (Kaplan & Anderson, 2007:18). TDABC embraces process complexities with lower errors (Hoozée & Hansen, 2014:5).

Traditional costing methods (TCM): Traditional costing methods refer to the way in which indirect and overhead costs expenses are being assigned to cost centres on an subjective basis, resulting in cost centres often “absorbing” costs not directly caused by them (Back, Maxwell & Isidore, 2000:48). In TCM, direct materials and labour are the only costs that can be traced directly to products. The system uses direct labour or machine hours as basis for the computation of overhead costs (Manalo, 2004:8).

1.6 Chapter Overview

Below is a high-level chapter layout to indicate the flow of research and the reasoning processes; also to provide initial high-level information of the objectives within each chapter.

Chapter 1: Introduction

The aim of this chapter was to introduce the study and to provide background to the research problem. The chapter presented the previous research conducted on ABC as well as a motivation that led to this research. It aimed to set the objectives and brief research methodology of the study.

Chapter 2: Research Methodology and -Design

The focus of this chapter is on the selection of an appropriate research design. It describes the detailed research methodology followed in order to meet the set objectives.

Chapter 3: Activity-based costing and the emergence of time-driven activity-based costing

The chapter reviews the fundamentals of cost allocation and differentiate between traditional cost allocation systems and activity-based cost allocation systems. The chapter furthermore discusses the emergence of time-driven activity-based costing.

Chapter 4: Development of an activity-driven costing framework

This chapter presents the empirical study conducted on the selected case study and results thereof. Departmental activities and consumption were selected through interviews with management as well as the analysis of ERP data and departmental monthly registers. A comparison between TCM and ABC results was conducted and analysed.

Chapter 5: Findings and recommendations

The summary of key research results is presented in this chapter, as well as the conclusion as to what extent the set objectives have been met.

The next chapter presents the research methodology and design.

CHAPTER 2

2 RESEARCH METHODOLOGY AND DESIGN

2.1 Introduction

The aim of this chapter is to address the first secondary objective as set in Chapter 1 (refer 1.3.2, page 10) by developing an appropriate research methodology to address the main research objective of developing an activity-driven costing framework for Company A. In order to understand the research process, the following key terms are defined and discussed: paradigm, research design, research methodology and research methods.

A **paradigm** is a set of assumptions or principles around the fundamental characteristics of reality leading to a particular world view. It deliberates on assumptions around the following: ontology - which is the belief about the nature of reality; epistemology - focusses on the relationship between knower and what is known; and assumptions around methodologies (Niewenhuis, 2016:52).

A **research design** is a framework utilised during a research study as guidance of how data is collected and analysed. Alternatively, it can be viewed as a blueprint of how data is collected, measured and analysed (Pandey & Pandey, 2015:18). According to Kumar (2011:41), the main purpose of a research design is to detail how a researcher goes about finding answers to the set research questions and to furthermore outline the specifics of the enquiry.

Research design details the process of the research by elaborating on what type of study design is being planned and motivation for the chosen design. It furthermore details the participants including the sampling method used to identify the latter. Lastly it describes how the information will be collected and analysed (Kumar, 2011:101). Pandey and Pandey (2015:19) elaborates by adding that the purpose of a research design is to make the research as effective as possible by facilitating the smooth scaling of the various research operations.

Kothari (2004:8) defines **research methodology** as a comprehensive process of solving a set research problem. The steps followed to address the research problem as well as the motivation behind each step is studied. It is therefore understood to be a discipline of studying how to scientifically solve a problem. It is furthermore essential for the researcher to be comfortable with both the research methodology and research method. Mouton (2015:56) agrees by positing that research methodology concentrates on the research process and the kind of tools and procedures to be used. It aims for the usage of unbiased procedures (Mouton, 2015:56).

Research methods are all the methods and techniques used to perform a research study. Alternatively it is all those methods utilised by the researcher during the progression of studying their research problem (Kothari, 2004:8). Research methods involve varying techniques of collecting data and the analysis and interpretation thereof as proposed by a researcher (Creswell, 2014:295).

The layout of the rest of the chapter is as follows: firstly the discussion of the research paradigm, followed by research approach, research design, case study research and research methodology discussions. Ethics and a summary concludes the chapter.

2.2 Research Paradigm

A paradigm is defined by Perri and Bellamy (2012:32) as a commitment by a group of scientists regarding what is to be observed and studied. It therefore determines what can be considered as relevant data for answering those research questions which are deemed key, how that data is to be interpreted, and what structure should be adopted when answering those questions.

Dammak (2010) agrees with Niewenhuis (2016:52) that a paradigm has four parts: ontology, epistemology, methodology and methods. As mentioned before, ontology is focussed on “the nature of existence” and is the departure point of researchers. Epistemology, on the other hand, “deals with the nature of knowledge” and is concerned with the interaction between the knower and what is known. The connection between ontology and epistemology is important as it is the researcher’s ontological and epistemological assumptions that form the basis for the choice of methodology and methods of research (Dammak, 2010).

The term worldview is often used interchangeably with the term paradigm. According to Creswell (2014:35) *worldview* is defined as “a basic set of beliefs that guide action”. Worldviews can be seen as a broad philosophical orientation about the world and arise due to discipline orientations, a researcher’s predispositions and past research experiences. Creswell (2014:35) further states that it is these types of beliefs that influence the approach taken by the researcher.

The two paradigms widely discussed in the literature are:

1. **Positivism** - supports a deterministic philosophy where causes determine effects outcomes (Creswell, 2014:36). Positivists posit that there is a single reality, which is known and can be measured. The former are most likely to use *quantitative* methods to measure this reality. The belief is that only objective, unbiased and observable facts can be the basis for science (Jansen, 2016:22).
2. **Interpretivism** – researchers’ individual backgrounds influence their interpretation, and they therefore position themselves in the research to acknowledge how their interpretation is affected by their personal, cultural and historical experiences. The researcher’s objective is to make sense of the meaning that others have about the world (Creswell, 2014:37). Interpretivists believe that there is no single truth or reality. Interpretivism further focuses on the meaning that individuals assign to their individual experiences (Jansen, 2016:22). According to Baxter and Jack (2008:545), this paradigm identifies the importance of the subjective human creation of meaning, but does not outright discard some notion of objectivity.

According to Nieuwenhuis (2016:56), research paradigms can be categorised through their:

- Ontology: Focused on what is the reality or truth?
- Epistemology: What and how can we know reality?
- Methodology: What procedures can we use to acquire knowledge?
- Methods: What tools can we use to acquire knowledge?
- Sources: What data can we collect?

The next section discusses the research paradigm from which this study was conducted.

2.2.1 Research paradigm of this study

This research is nested in interpretivism, as it aims to expand on the understanding by dwelling on multiple participant meanings. There are multiple realities due to varying human experiences, knowledge, views and interpretations. The reality of this case study was constructed through human interactions and actions. The case study is understood through a mental process of interpretation that is influenced by the social context. Due to the researcher and the researched being interlocked, and data collection being an interactive process, the approach is interpretive in nature.

2.3 Research Approach

Research approaches is defined by Creswell (2014:31) as the plans and procedures for a research studying ranging from the broad assumptions made to the specific methods of data collection, analysis and interpretation (Creswell, 2014:31).

Creswell (2014:32) summarises the three research approaches as follows:

- **Qualitative research:** an approach for exploring and aiming to obtain an improved understanding of the meaning individuals and groups attribute to a social and human problem. The process of research includes emerging questions and procedures. It also includes data typically collected in the participant's setting, data analysis inductively building from particular to general themes, and the interpretations of the meaning of the data. Baboucarr and Soaib (2014:35) state that qualitative research is multi-method in focus, involving an interpretive and natural approach to its subject matter. This means that qualitative researchers study subject matters in their natural settings, attempting to make sense of and interpret the meanings people bring to them.
- **Quantitative research:** an approach for testing unbiased theories by studying the relationship among variables. In turn, these variables can be measured in order that data can be analysed using statistical processes.

- **Mixed methods research:** an approach combining a collection of both quantitative and qualitative data, incorporating the two forms of data and using distinct strategies that may involve philosophical assumptions and theoretical frameworks. The key assumption is that the combination of qualitative and quantitative approaches provides a more comprehensive understanding of a research problem than either approach single-handedly would have provided.

Next the research approach for this study is discussed.

2.3.1 Research approach of this study

This research took a qualitative approach to explore Company A. The motivation thereof is that it has complexities beyond the scope of more 'controlled' methods. The aim is to 'get under the skin' of Company A, to discover what really transpires, the informal reality which can only be observed from the inside (Yin, 2009:11).

2.4 Research Design

A research design is a procedural blueprint that is used by the researcher to answer questions validly, objectively, economically and importantly accurately (Kumar, 2011:96). A research design is where a researcher decides and communicates to others decisions regarding which study design are proposed to be used. This decisions include details of how information is to be collected from participants, how these participants are going to be selected, how collected data is going to be analysed and findings communicated.

An excellent research design minimises bias and ensures the reliability of the data collected and analysed. The best design in scientific investigation is one that shows the smallest experimental error (Pandey & Pandey, 2015:20). Pandey and Pandey (2015:20) provide the following guidance in terms of the characteristics of a good research design:

- **Objectivity** - the outcomes relate to the method of data collection and scoring of the responses.

- **Reliability** - consistency all the way through a series of measurements. For example, if a participant responds a certain way to a particular item, he or she is expected to provide a similar response to that item when asked again.
- **Validity** - a measuring device or instrument is valid when it measures what it is supposed to measure.
- **Generalisability** - how best the data collected from the samples can be used for drawing certain generalisations related to a larger group from which that sample is drawn.
- **Adequate information** – evidence of a good research design is that adequate information is provided in order for a research problem to be analysed from a wider perspective.

This study is based on a qualitative approach. Qualitative methods focus mainly on gathering data that will support the researcher in understanding the meaning of what is going on (Gillham, 2008:10). The primary focus in qualitative research is to explore, understand, discover, explain, and clarify situations with the designs often based on deductive rather than inductive reasoning (Kumar, 2011:103). Soiferman (2010:3) defines induction as moving from the specific to the general as opposed to deduction which begins with the general and ends with the specific; summarily articulated as quantitative (deductive) and qualitative (inductive).

2.4.1 Case study

A case study has been selected as the appropriate research tool for this study. The term '**case study**' is an in-depth study of one, or a limited number of cases (Tight, 2017:6). A case study is conducted to generate insight and understanding by providing a rich and thick description of the case and by illuminating its interaction to its broader context. It will be used to explore the problem in its focused setting (Rule & John, 2011:7).

As a research method, the case study allows the researcher to keep the holistic and meaningful features of real-life events (Yin, 2009:4). A **case study** is an in-depth empirical examination exploring a contemporary phenomenon within its real-life context (Yin, 2009:18). Rule and John (2011:8) agree that a case study approach allows a great deal of depth, flexibility, versatility and manageability.

Case studies have been further defined as “research situations where the number of variables of interest far outstrips the number of datapoints”. While case studies may use quantitative data, an important difference with other research methods is that case studies aim to study the phenomena in their contexts, rather than in an independent setting (Gibbert, Ruigrok & Wicki, 2008:1467). This view is shared by Baboucarr and Soaib (2014:36) who highlight that the focus of a case study is to isolate and highlight the characteristics of a particular entity.

According to Tight (2017:6), a ‘case study’ can be distinguished when:

- (a) that the data collection methods are qualitative;
- (b) that the research is an in-depth examination of a phenomenon;
- (c) that a specific type of evidence is used;
- (d) that data is gathered in a ‘real-life context’;
- (e) that it is difficult to distinguish between the case and the context;
- (f) that multiple sources of evidence are employed, and
- (g) that a single observation or example is investigated.

The selection of a specific type of case study design is directed by the overall study’s purpose, be it to explore, to compare between or to describe a case (Yin, 2009). According to Yin (2009) and Stake (1995), case study types can be categorised as follows:

Explanatory: This type of case study is relevant when questioning the presumed underlying links with real-life interventions that are too complex for the use of either survey or experimental strategies (Baxter & Jack, 2008:547). Explanatory case studies attempt to explain what happens in a specific case or why that happened (Rule & John, 2011:8).

Exploratory: An exploratory case study examines an unexplored phenomenon and which could furthermore lay the foundation for future studies (Rule & John, 2011:8).

Descriptive: This type of case study is used to describe the real-life context in which a phenomenon can occur (Baxter & Jack, 2008:548). A complete description of a

phenomenon including its background is provided in a descriptive case study (Rule & John, 2011:8).

Multiple-case studies: This type of case study allows the researcher to investigate differences within and between cases with the purpose to replicate findings across these cases. Cases should be chosen cautiously in order for the researcher to predict similar results across cases, or to predict opposing results based on a theory (Baxter & Jack, 2008:548).

Intrinsic: This approach is used with the purpose to gain a better understanding of a case. The case is not undertaken as it represents other cases, or because it illustrates a particular phenomenon or problem, but because the case itself is of high interest in all its particularity and ordinariness (Baxter & Jack, 2008:549). Pearson, Albon and Hubball (2015:2) describe that an intrinsic case study commonly occurs in program evaluation as the case is generally allocated, rather than chosen.

Instrumental: This case study type is generally employed to achieve more than just to gain an understanding of a particular situation. It often provides insight and awareness into an issue or assists in improving a theory. The case is therefore of secondary interest and plays a supportive role in facilitating our understanding of something else. The case is often observed contextualised in-depth detailing its ordinary activities as it assists the researcher to pursue the external interest (Baxter & Jack, 2008:549).

Collective case studies is used interchangeable with the term of “multiple case studies” (Baxter & Jack, 2008:549).

2.4.2 Research design of this study

An exploratory, single case study of Company A has been selected as research design to develop an activity-driven costing framework - a unique case, as it is one of its kind in the specific industry. It can be studied in-depth, as the researcher is an employee of Company A and therefore has insider knowledge of the company. The case cannot be considered without context, such as the industry and country in which the company

operates. It would be impossible to have a clear picture of Company A's costing framework without contextualising the environment.

2.5 Research Methodology

Case study methodology has the benefit of flexibility regarding the types of research questions that can be researched, and the data collection methods that can be employed (Pearson *et al.*, 2015:2).

2.5.1 Data collection techniques

Data collection methods are procedures for capturing that which is important in answering the research question from the data that has been collected (Perri & Bellamy, 2012:10). According to Yin (2009:101), the following are some of the commonly used data collection methods in case study research:

Documentation

Documents represent a formal framework that the informal reality should be related to (Gillham, 2008:21). This type of information can take many forms and should be the object of clear data collection procedures (Yin, 2009:101). Advantages to documents are:

- They can be reviewed repeatedly and are a stable source of information.
- They are unobtrusive, as they are not created for the benefit of the case study.
- They are exact, as they contain names, details and references of events.

Some of the weaknesses to be mindful of are, amongst others, irretrievability (could be difficult to find) and biased selectivity (if collection is incomplete) (Yin, 2009:102).

Archival Reports

These are historical reports, but might offer a valuable longitudinal view on the current situation (Gillham, 2008:21). Archival reports have the same strengths and weaknesses as documentation. According to Yin (2009:102) archives are generally quantitative and precise but access could be limited due to privacy reasons.

Caution raised by Yin (2009:106) regarding archived data is to be mindful that this data was produced for a specific purpose and audience and therefore when using archival records it has to be contextualised.

Interviews

This data collection method is targeted as it focusses directly on the case study topics. It can prove to be: i) insightful ii) and can provide perceived casual inferences and iii) explanations.

A weakness of this data collection technique might be that poorly articulated questions could lead to bias. Another weakness is that responses could be biased or lead to inaccuracies due to poor recall. And interviewees could give the interviewers what they want to hear (Yin, 2009:102). Notwithstanding, semi-structured interviews, if done correctly, can be the richest source of data (Gillham, 2008:65).

Observation

This data collection method has three primary elements: observing what people do, listening to what they are saying and then asking clarifying questions (Gillham, 2008:45). There are two main kinds of observation: direct- and participant observations.

Direct Observation

Events are covered in real time and covers the context of the case (Yin, 2009:102). This is a 'fly on the wall' approach (Gillham, 2008:21). It adds new dimensions for understanding the context of the case being studied (Yin, 2009:111). Yin (2009:102) points out weaknesses such as direct observation being selective, time consuming, as well as the possibility that the event might proceed differently because it is being observed (observer effect).

Data gathering included direct observation of meetings and side-walk activities. Yin (2009:111) adds that, to increase reliability of observational evidence, is to have more than a one observer, be formally or casually. Resources permitting a case study investigation could allow for the use of more than one observer.

Participant Observation

Data collection includes participants' observation where the researcher is not merely a passive observer and can take on a number of roles within the case study situation (Yin, 2009:2011). This is the case where the researcher will be 'in' the setting - in some active sense - keeping eyes and ears open, noticing things that might normally be overlooked (Gillham, 2008:21).

The roles for illustrative studies in the organisation that were employed included, but not limited to, taking a functional role in expenditure processing to follow cost sources, being a key decision maker in Company A's organisational setting.

2.5.2 Data collection techniques for this study

Research data collected from Company A included, but was not limited to, financial reports, meeting minutes, prior formal studies, budget and forecast reports, organograms, departmental incident registers and data from the ERP system.

Archives were broadly used in this research for two important purposes, as pointed out by Yin (2009:103), namely 1) to validate, and 2) to expand evidence from other sources. Archival reports collected and analysed included data previously collected by the company, prior budgets and expenditure reports.

Interviews with representatives from IT, HR, finance, sales, planning, operational and support office management were conducted in a fluent manner. The interviews were a guided conversation rather than a structured query. Interviews were held in the manager's office where participants felt the most comfortable. The interviews were half an hour to an hour long and the interviewer took field notes of the interview.

In line with in-depth interview case study research, participants were asked facts of matter questions, as well as their opinions about events. Interviews took an extended period, as participants were asked to propose their insights into certain occurrences. Key interviewees that assist in this manner are considered "informants" and provide the researcher with corroboratory or contrary sources of evidence (Yin, 2009:107).

Formal and more structured questions along the lines of a survey were also be used to collect research data to include perception and attitudes of the workers and managers of Company A.

2.5.3 Data analysis

Data analysis makes use of processes to examine collected data to ensure that the research question is answered (Perri & Bellamy, 2012:10). Gillham (2008:25) defines data analysis procedures as basically the way the researcher will order and present findings. An analytical strategy is essential to assist with treating the evidence fairly, to produce analytical conclusions and to rule out alternative interpretation (Yin, 2009:130).

Yin (2009:130) describes four data analytic strategies:

- i. **Developing a case description:** initially relevant literature should be reviewed that could have exposed gaps or topics of interest that spurred the interest in the case study. A descriptive framework organises the case study analysis but also accepts that data was collected about each topic to begin with.
- ii. Relying on **theoretical propositions:** this strategy means following the theoretical plans that led to the case study. Theoretical proposition stemming from “how” and “why” questions can be exceptionally useful in guiding case style analysis.
- iii. **Using both qualitative and quantitative data.** Quantitative data is applicable to cover the behaviour or events that the case study is trying to clarify and the data is linked to the unit of analysis. Collecting quantitative data subjected to statistical analysis such as surveys - alongside qualitative data such as interviews and observations - will lead to successful, strong analytics.
- iv. Lastly, examining **rival explanations** tries to define and test rival explanations. Initial proposition would have included rival hypothesis. Comparison groups may cover rival circumstances to be examined.

The selection of analytical strategy and techniques is critical, as they deal with difficulties of developing internal and external validity.

2.5.4 Data analysis of this study

This study conforms to developing a case description strategy to identify the overall pattern of complexity in the development of an activity-driven costing framework for Company A.

2.6 Methodological Rigour

According to Gibbert *et al.* (2008:1468) four criteria are frequently used to evaluate the rigour of field research: internal validity, construct validity, external validity and reliability. Each one of these are now discussed.

2.6.1 Internal validity

Internal validity refers to the causal interactions between variables and results. The concern is whether the researcher provides a reasonable causal argument, logical reasoning that is powerful and persuasive enough to defend the research's conclusions. Three measures have been proposed to improve internal validity: firstly, case study researchers should articulate a clear research framework which establishes that variable x leads to outcome y, and that y was not caused by a third variable z. Secondly, using pattern matching, researchers should compare empirically observed patterns with either predicted ones or patterns recognised in previous studies and in different contexts. Thirdly, theory triangulation allows a researcher to verify conclusions by adopting multiple perspectives (Gibbert *et al.*, 2008:1468).

2.6.2 Construct validity

Construct validity refers to how far a study investigates what it claims to investigate, i.e. to the degree to which a procedure leads to a precise observation of reality. In order to enhance construct validity in case studies, two measures have crystallised. Firstly, researchers have been encouraged to start a clear chain of evidence in order to let the reader to reconstruct how the researcher progressed from the initial research questions to the final conclusions. Secondly, researchers have sought to triangulate which means to adopt different angles from which to view the same occurrence by using diverse data collection approaches and diverse data sources (Gibbert *et al.*, 2008:1468).

2.6.3 External validity

External validity is based on the intuitive belief that theories must be seen to account for phenomena, not only in the setting in which they are studied, but also in varying other settings (Gibbert *et al.*, 2008:1469).

2.6.4 Reliability

Reliability refers to the lack of random errors, allowing subsequent researchers to arrive at the same conclusions if they conducted the study along the same steps again. The crucial words here are replication and transparency. Transparency can be heightened through measures such as cautious documentation and explaining of the research procedures.

The three validity types are dependent; without a clear theoretical and fundamental logic (internal validity), and without a cautious link between the theoretical assumption and the empirical observations (construct validity), there cannot be external validity in the first place (Gibbert *et al.*, 2008:1469).

2.6.5 Case study methodological rigour

According to Yin (2009:114), principles of data collection have been established to resolve difficulties of establishing the construct validity and reliability of the case study evidence.

The first is to use multiple sources of evidence. The rationale for using multiple sources of evidence is called triangulation (Yin, 2009:114). Furthermore, the advantage of using multiple sources (the development of converging lines of inquiry, which is a process of triangulation and corroboration) is that the case study findings are likely to be more conclusive and accurate. Types of triangulation discussed by Yin (2009:116) are that of data sources (data triangulation); among diverse assessors (investigators triangulation); of perspectives to the same data set (theory triangulation) of methods (methodological triangulation). This research relates only to data triangulation, collecting information from multiple sources aimed at validating the same facts and events.

The second principle is the creation of a case study database. It is a way of organising and documenting the data collected for case studies such that it increases reliability and accuracy. Gillham (2008:22) highlights the importance of maintaining a research log. It should hold the evidence such as discussion and observation notes, as well as personal notes such as questions the researcher needs to reflect on later, someone to consult, etc. Research records must be open for inspection and organised so that someone else can follow them (Gillham, 2008:23).

The third and last principle, according to Yin (2009:122), is the maintenance of a chain of evidence. This principle allows an external observer to trail the source of evidence from initial research questions to final case study conclusion.

Kumar's (2011:28) research contributed the following:

- The concept of **control** implies that, in investigating the causality in relation to two variables, the design and methodology has to minimise the effect of further factors affecting the relationship.
- **Rigorous** is being reliable in ensuring that the procedures followed to find answers to questions are appropriate, applicable and justified.
- **Systematic** implies that the procedures undertaken for the investigation follow a certain logical sequence. The diverse steps cannot be taken in a haphazard way.
- **Verifiable** implies that whatever is decided based on the research's findings, is accurate and can be verified by others.
- **Empirical** means that any conclusions drawn are based upon solid evidence gathered from data collected from real-life experiences or observations.

This study sternly follows the above-mentioned principles to enhance the study's quality and trustworthiness.

2.7 Ethics

Pearson *et al.* (2015:5) found that a case study methodology may present numerous ethical dilemmas which are often disregarded. They state that, if the case study comprises of data collection through interviews or other methods concerning people, it is crucial that participants be treated with dignity, respect and care throughout the

process. Confidentiality must be protected and it is common to guard the identity of individuals and research sites.

In order to ensure that the researcher approaches this study in an ethical manner, consent was requested from and granted by Company A's management and the study has been approved by the ethical committee of the North-West University. Furthermore, permission from interviewees was obtained prior to all interviews. In addition, the company's identity is protected by referring to it as Company A.

2.8 Summary

The aim of this chapter was to address the first secondary objective as set in Chapter 1, namely that of developing an appropriate research methodology to be followed to develop an activity-driven costing framework for Company A (a South African cash services company).

The chapter addressed fundamental assumptions behind the set of common beliefs and agreements (paradigm), what a reality is (ontology), how does one know the reality (epistemology) and how does one go about finding it (methodologies). The fundamentals of available research approaches such as qualitative, quantitative and mixed methods were reviewed, as well as their roles in the selection of methods of data collection, analysis and interpretation.

The importance of case study as a research method was introduced and explained as a way of investigating an empirical topic by following an established set of pre-specified procedures. The articulation of these procedures were discussed in depth in the chapter.

The chapter reviewed six sources of case study evidence, namely documentation, archival records, interviews, direct and participant observation as well as the evidence that can be collected from these sources.

The chapter concluded by discussing the ethical and methodological rigour decisions such as internal validity, construct validity, external validity and reliability that influences a case study.

Chapter 3 reviews the literature on traditional costing methods, activity-based costing and time-driven activity-based costing.

CHAPTER 3

3 ACTIVITY-BASED COSTING AND THE EMERGENCE OF TIME-DRIVEN ACTIVITY-BASED COSTING

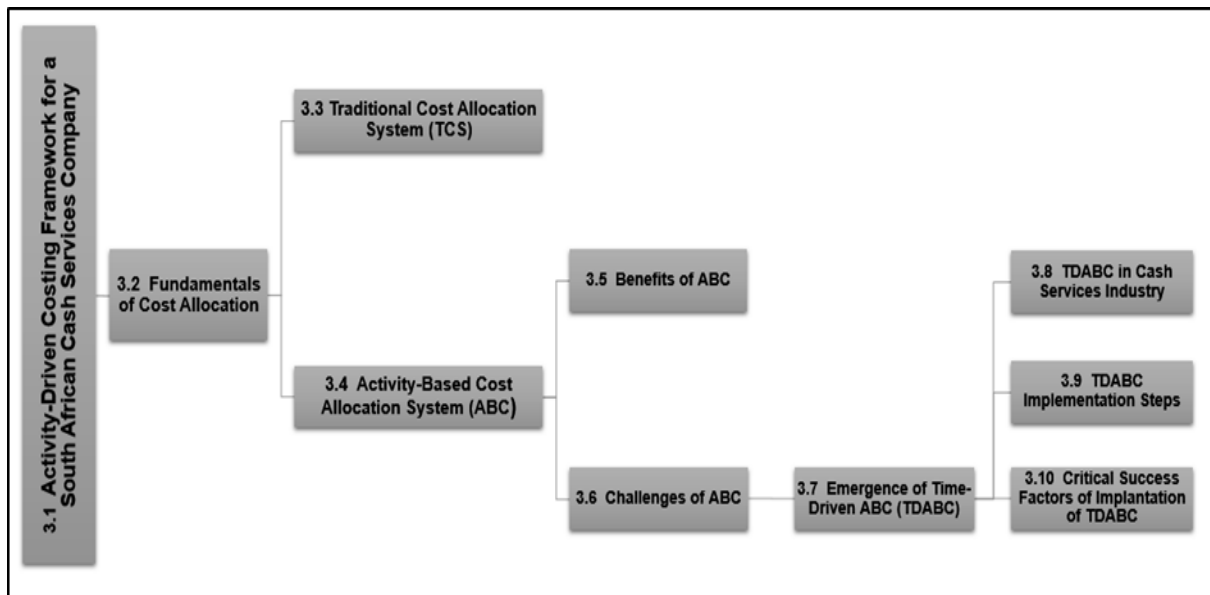
3.1 Introduction

This chapter aims to address the second secondary objective as set in Chapter 1 (refer section 1.3.2, page 10) of reviewing the existing literature on the fundamentals of cost allocation, traditional costing methods (TCM) and activity-based costing (ABC), as well as the emergence of time-driven activity-based costing (TDABC) .

A literature review is where theories and previous research that could influence the chosen research topic are identified by the researcher (Ridley, 2008:2). It is where the researcher shows that they are aware of and can interpret what is already known by identifying contradictions and gaps in existing knowledge (Jesson, Matheson & Lacey, 2011:10).

This study attempts to contribute to the literature by achieving the main research objective as stated in Chapter 1 (refer section 1.3.1, page 9), namely of developing an activity-driven costing framework for a South African cash services company. Figure 3.1 highlights the structure of the chapter.

Figure 3.1: Chapter 3 flow diagram



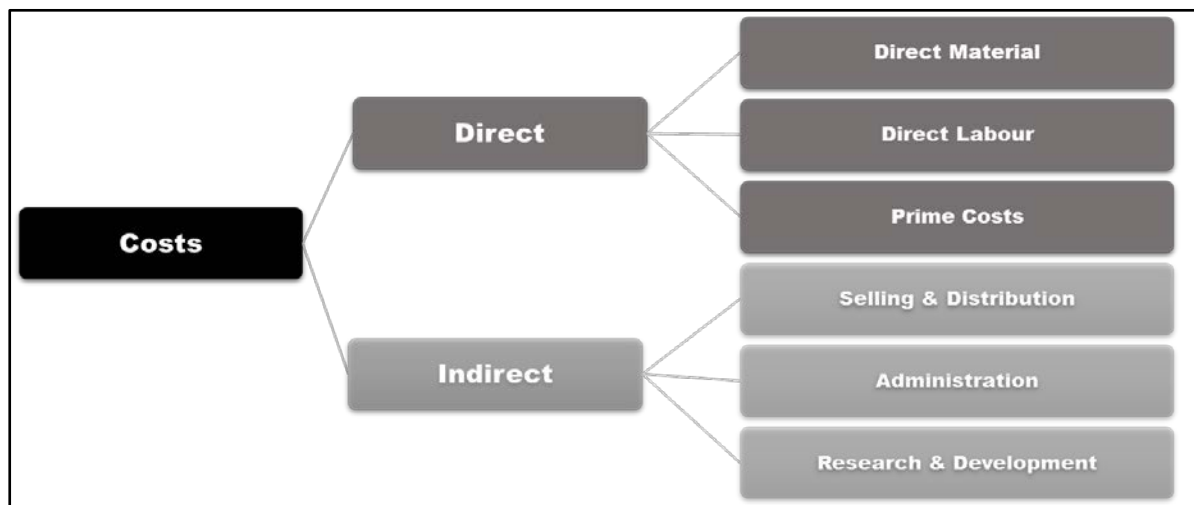
Source: Own Research

3.2 Fundamentals of Cost Allocation

Contemporary business, whether large or small, requires management to have a clear understanding of its costs and a scalable, easy-to-understand cost model that can quickly reflect changes in business as they occur (Barndt, Oehlers & Soltis, 2015:24).

Costs incurred by organisations can be divided into two classes: direct and indirect (also known as overhead) costs (refer Figure 3.2 below). Direct costs can be accurately traced to cost objects such as direct material and labour. These costs can be precisely and completely traced to a particular product or service, whereas indirect costs are not so easily traceable. Indirect costs such as finance, IT, HR and group management are shared by multiple divisions (Korok & Goldmanis, 2012:1342).

Figure 3.2: Fundamentals of services cost classification



Source: Own Research

Three important reasons why overhead costs are allocated to products are described as follows by Heisinger and Hoyle (2012:3.1):

- **Compliance with International Financial Reporting Standards (IFRS):** IFRS requires that all manufacturing costs - direct materials, direct labour, and overheads - be allocated accurately to products for inventory costing purposes. This requires that all overheads be allocated to products.
- **Provide information for decision making:** An example of a decision that is made by management that require accurate information is the setting prices for products. Prices are normally based on the cost of products. The inclusion of only direct materials and direct labour is not sufficient; overhead costs have to be considered as well.
- **Promote efficient use of resources:** The manufacture of a product includes several different activities, such as the purchasing raw materials, the setting up of machinery used in production, the inspection of final product and fixing defective products. All of these activities mentioned above consume resources (consumption of resources is an alternative way of saying that a cost is linked to each of these activities). The incentive to get managers to use activities much more efficiently can be developed by products and services being charged for the use of these activities.

Cost allocation is the process of tracing and assigning costs to cost objects based on a cause and effect relationship (Cokins, 2001:2). A costing system plays a pivotal role in the decision making and product-pricing process in all organisation (Manalo, 2004:5). The two types of systems that can be used to assign indirect costs to objects that are going to be discussed, are a traditional cost allocation system (TCS) (section 3.3) and an activity-based cost allocation system (ABC) (section 3.4).

3.3 Traditional Cost Allocation System (TCS)

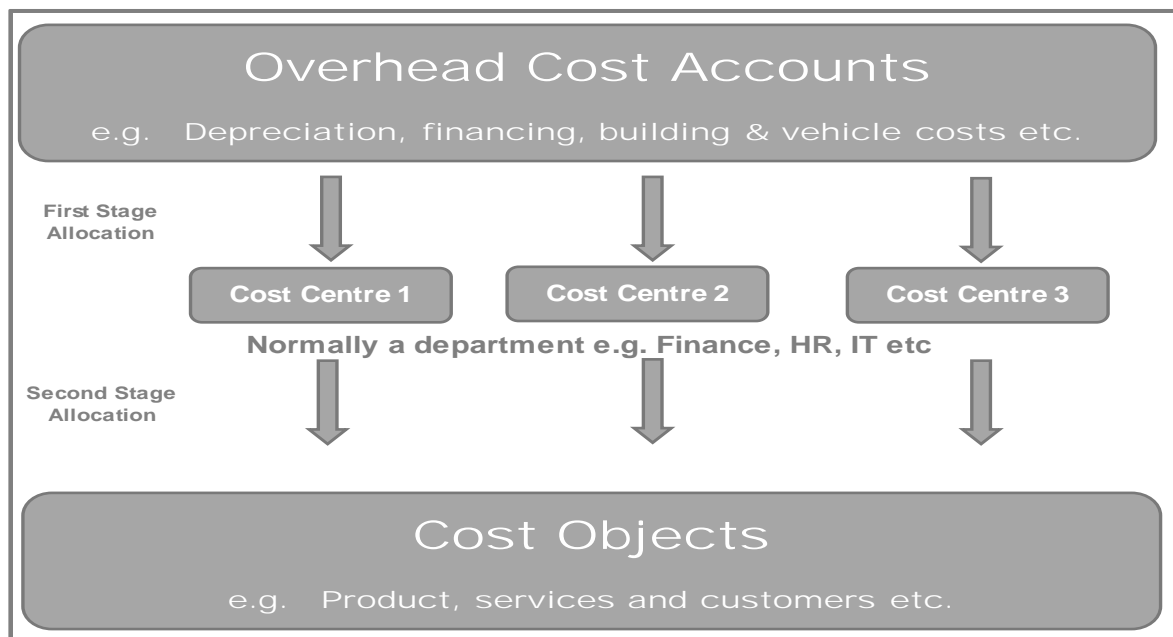
TCS has been around for the past two centuries and was developed to allocate factory and corporate overheads to products by a rate based on direct labour or other volume related measures (Knoetze, 2000:8). Using direct labour as basis for the calculation of overhead costs was sensible, as it contributed the largest percentage of the cost that were incurred (Manalo, 2004:8).

Though simple and cost effective, TCS never aspired to ensure effectiveness of a cost plan; it was merely aimed at cost controlling, cost cutting and sustaining. It does not offer much in terms of optimising cost usage, reducing process waste and errors, ensuring quality management and thereby continuing to offer reliable service level management (Srinivasan, 2008:4).

TCS reallocates overhead costs incurred by mainly using a single cost driver, such as volume, direct labour or machine hours. The former was developed when direct labour costs were valuable and accounted for the bulk of the production cost. Therefore, for organisations that mass produced a very narrow range of products and services and mostly incurred variable costs, these measures were appropriate (Ashford, 2011:4).

TCS is generally a two-stage approach of allocating costs to products and services, as indicated in Figure 3.3 below:

Figure 3.3: Traditional costing system



Source: Own Research

First stage allocation entails the assignment of overheads to cost centres. Normally cost centres are departments. The second allocation stage entails the allocation of costs that have accumulated in cost centres to cost objects, using a selected allocation base, typically labour or machine hours (Osadchy & Akhmetshin, 2015:1708).

TCS has generally been popular due to its relative ease of application. Products and services with higher direct labour hours were allocated more overhead costs. This system worked well for organisations that manufactured large volumes of a few products and/or had immaterial overhead costs (Popesko, 2009:38).

In 1963 Peter Drucker highlighted that traditional cost calculation methods lack accuracy and relevance, resulting in mutual subsidy between products and their costs (Cardos & Pete, 2011:155). Managers may therefore be misled when considering the profitability of certain products due to the inaccurate allocation of indirect costs. In other words, the TCS can provide misleading information leading to managers making inaccurate decisions.

Company A currently utilises TCS to allocate indirect costs. Company A's cost allocation system is discussed in Chapter 4.

Another system that can be used to allocate indirect costs to objects is activity-based costing.

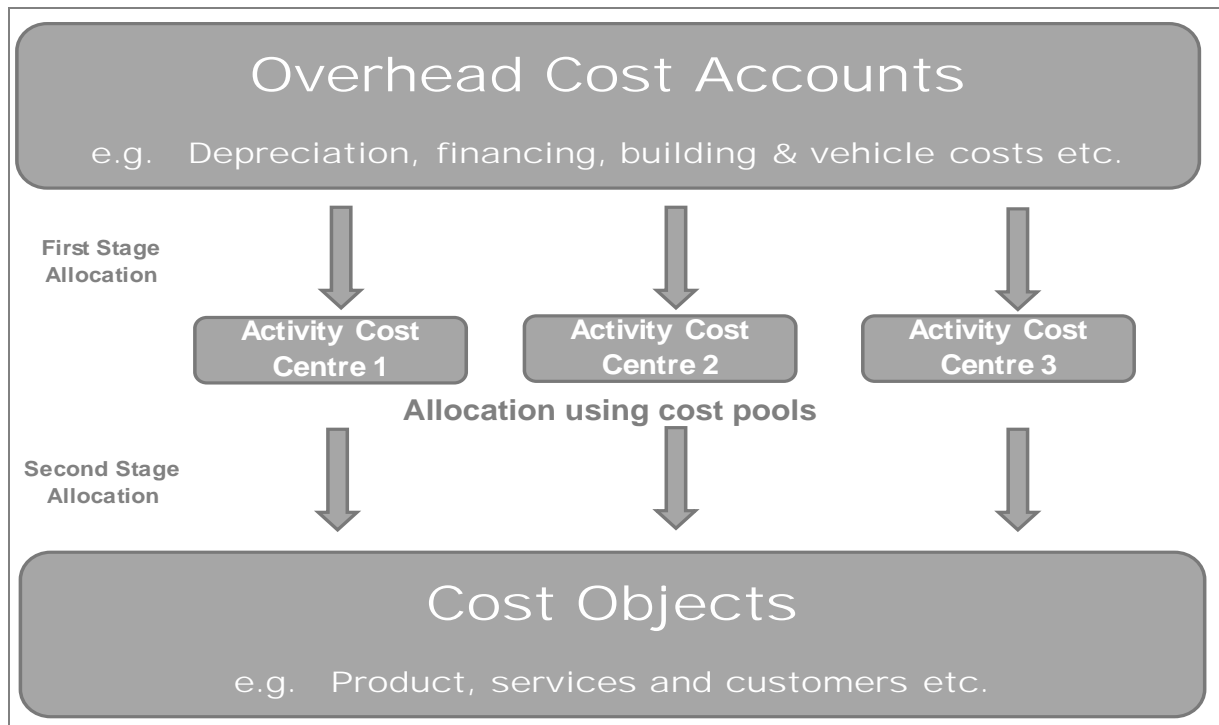
3.4 Activity-Based Costing Allocation System (ABC)

Due to global competition, organisations have increasingly been forced to become more adaptable, integrated and highly automated in order to increase their productivity whilst reducing their costs. However without accurately allocating cost, it is nearly impossible to maintain competitiveness (Akyol *et al.*, 2007:136). This need to reduce costs without impacting quality implies that non-value adding activities needs to be identified and eliminated. TCS is a system that cannot deliver on these requirements.

In order to address the shortcomings of TCS, the concept of ABC was initially introduced in the manufacturing sector in the United States of America (USA) during the 1980s (Ashford, 2011:3). ABC can be explained as a methodology that measures the cost of products, identifies activities driving the cost, and allocates the indirect cost to cost objects based on these activities. It is considered an improved alternative to traditional cost-based systems (Akyol *et al.*, 2007:136).

Wegmann (2009) highlights that it is considered an advanced cost allocation system which allows the classification of more costs as direct with the aim to reduce the number of indirect cost pools by identifying cost drivers. ABC enables optimal cost allocation by using smaller cost pools also referred to as activities. The use of cost drivers mean that the costs of these activities are the basis for allocating costs to other cost objects such as products or services (Wegmann, 2009). It determines the cost for any given process by identifying the relevant activities involved in the process or the processes individual activities, and then assigning a cost to each of these activities (Back *et al.*, 2000:48).

Figure 3.4: Activity-based costing system



Source: Own Research

Cost drivers are directly linked to activities and can therefore occur on several levels (Akyol *et al.*, 2007:136):

1. **Unit level drivers**, assume that the inputs increase for every unit that is in production.
2. **Batch level drivers**, assume that the variation of the inputs occur as a result of every batch that is produced.
3. **Product level drivers**, assume that resource inputs are to support the production of the individual product type.
4. **Facility level drivers** are the drivers which are associated with the facility's production process.

Akyol *et al.* (2007:138) found that ABC can, as a result of making use of the activity concept combined with the driver level where costs are incurred, positively link the product costs to production knowledge. It can answer questions such as:

- how a product is produced;
- how much time is required to complete an activity, and finally
- how much resources are absorbed by performing this task.

The resource expenditures allocated to an activity are determined through interviews, time sheets and direct observations of the percentage or amount of time people spent on different activities (Srinivasan, 2008:17).

Performance improvement are clearly seen in terms of costs, time and quality. The connection between ABC and performance improvement is evident. ABC has a moderate influence on time, a significant influence on quality, and a substantial influence on cost (Ashford, 2011:5).

ABC enables management to evaluate the organisation in various ways either by: 1) product or group of related products, or 2) individual client or customer group, or 3) distribution channel. In addition, ABC analysis also highlights exactly what activities are related with a particular part of the organisation and how those activities are in turn related to the consumption of resources and generation of revenues (Ashford, 2011:4).

3.5 Benefits of implementing ABC

According to Sartorius *et al.* (2007:5) organisations have various reasons for adopting ABC which can be classified into a number of categories:

- **Cost accounting:** to achieve improved allocation of indirect costs resulting in more accurate costing of products, which in turn will provide more accurate costing information.
- **Cost management purposes:** to gain a clearer understanding of cost reduction and cost drivers.
- **Development of budgets:** also to support other innovations such as Just-In-Time and Total Quality Management systems.
- **Performance measurement purposes:** in order to measure performance such as product profitability, activity management and departmental efficiency.

- **Decision making reasons:** to enable improved decision making, including the selection of the optimal product mix and activities, pricing and outsourcing as well as the evaluation and justification of investments in new technologies.
- **General management:** reasons include responding to increased pressure from regulators as well as creating cost awareness among employees by incentivising desired behavioural changes.
- **Fostering of better relationships:** analysing and management of customer profitability.

ABC is required when there is a wide product variety combined with a high product complexity, minimal commonality in overheads, difficulties in existing cost allocations and a change in business setting (Rundora, 2012:15).

Back *et al.* (2000:57) found ABC to be an important analytical tool for understanding the interaction between cost and cycle time for any process under investigation. In a period where construction and engineering companies are frequently striving to improve the effectiveness and efficiency of their operations, it is imperative that they fully comprehend the behaviour of their processes.

Small and medium enterprises (SMEs) constitute a large portion of the total enterprises in the world economy and are known for their adaptability, innovation and being open to change. SMEs operate in highly competitive markets and, as a result, precise knowledge of their cost of quality (CoQ) is essential for survival. Attempts to correct quality with cost information was difficult, due to lack of information from TCS. Research by Özkan and Karaibrahimoğlu (2013:429) found that the use of ABC enables the measurement and reporting of CoQ through detecting quality-related costs. The CoQ reports under ABC provide organisations with the opportunity for quality and cost control improvements, and in turn improving competitiveness.

According to Srinivasan (2008:6), advantages of ABC include the following:

- ABC empowers the user with a better forecast of the total real costs of products, services and unused capacity.
- It allows flexibility as it flows with the process and activities.
- It aids to identify costly activities that can be targeted for re-engineering.

- ABC helps management to understand the cost trends of a business and sector, to invest in research and development for better products at different costs.
- It can provide all benefits associated with output based budgeting.

Rundora's research (2012:23) adds that ABC can effectively support continuous improvement, flexible manufacturing and short lead times by helping managers to:

- identify, monitor and trace significant technology driven costs directly to products;
- identify the cost drivers that produce or impact cost and also those that do not contribute to perceived customer value;
- to enable full understanding of the impact of new technology on all components of performance;
- interpret company targets into activity goals and analyse the performance of activities across business departments, and to
- endorse standards of excellence.

ABC is a method that can change management behaviour by focussing attention on operational processes, spending patterns, supporting activities and responsibilities across an organisation (Knoetze, 2000:34).

In conclusion, ABC is a "scalpel" management, a type of management accounting that should be used to formulate the company strategy for its next competitive battle - that of economic survival (Knoetze, 2000:34).

3.6 Challenges to implementing ABC

Notwithstanding the identified benefits of ABC, a limited number of companies have attempted to adopt this costing and management technique. Sartorius *et al.* (2007:7) found that the main reason why organisations do not implement ABC is due to the high implementation cost and perceived design complexity. In addition, the lack of both financial and technical resources in organisations tend to be the most common barrier for lack of implementation of ABC.

Furthermore, Srinivasan's (2008:17) research found that the traditional ABC model has been challenging to implement. This is because of increased cost to gather costing information from employees and other stakeholders through interviews and

surveys. In addition, the problems associated with updating and maintaining the ABC model when the following occurs:

- resource and processes consumption change;
- new activities are added, and
- upsurges in the complexity and diversity of individuals' orders, channels and customers.

One of the challenges when implementing ABC in an organisations is that production processes are not similar and static but rather variable to some extent. The reason for the variability in nature is due to the need for human intervention and it has been proven that humans do not perform activities identically every single time. It has repeatedly been proved that humans are often prone to wide variations in personal productivity (Back *et al.*, 2000:49).

Furthermore, processes are rarely without variation of some kind. Even when processes are repetitive, they are still subject to unanticipated changes, errors, rework and other events that impact the performance of such a process. Such impacts may influence the cost of an activity, the frequency and duration thereof or even the relationship with other activities. It can therefore be concluded that most processes are variable with an inherent uncertainty in their output (Back *et al.*, 2000:49).

Mahal and Hossain (2015:71) further added the following as disadvantages of the ABC system:

- Managers find the ABC implementation process complex and difficult to understand. It furthermore produces a high volume of data, activity measures which require collection, checking and interpretation.
- Due to its complexity of the process, the decision-making process can be quite lengthy.
- Resistance against the change from TCS to ABC as managers are comfortable using TCS to run their operations.
- ABC data can easily be misread, as there might be an enormous amount of unrelated data.

- In practice, managers can insist on allocating all costs to cost objects insistence which might lead to pricing errors due to 'overstated cost' and 'understated margin result'.
- The ABC implementation team may be discouraged if management fails to consider the newly implemented ABC profitability and cost information.
- Consultants cannot always support management adequately as they are not familiar with an organisation's operations.
- Employees could feel threatened if they perceive that the new ABC system will affect their responsibilities and in turn resist changing to the new system.

Notwithstanding the benefit of ABC delivering more accurate product or service costs than the TCS, managers should be sensitised to the following limitations (Rundora, 2012:24):

- **Allocations:** Some costs do not have a clear-cut activity or cost driver and therefore would require allocations to products and departments based on a volume-driven measure due to the impracticality of finding an alternative activity or cost driver.
- **Omission of costs:** It is not always possible to include all the costs related to the product or service costs in an ABC system.
- **Expense and time:** An ABC system can be timely and expensive to develop.

Knoetze (2000:33) highlight the following reasons why some ABC systems fail:

- **Perception:** It is perceived by employees to be just another meaningless financial- or managerial exercise.
- **Technical & Financial Capability:** the difficulty in identifying relevant cost drivers and it is furthermore expensive to set up and maintain when compared to the useful information derived from it.
- **Time:** The time and effort involved in establishing and implementing an ABC system can be excessive.

Research by Rundora (2012:73) found that the non-users of ABC viewed the challenges of implementing and maintaining an ABC system as more significant than the ABC users. Moreover, there is evidence of a significant difference between the

perceptions of the non-users and those of the users. The non-users viewed the following challenges as the most significant: lack of ABC knowledge, difficulty in defining cost drivers and activities, and the priority of more pressing projects and challenges.

Criticism against ABC includes that it uses historical costs, usefulness of which is doubtful, particularly if future cost considerations are of higher importance. Critics also state that ABC merely re-allocates costs, and practical limitations imply that nothing can be done with the results (Knoetze, 2000:35).

The next section discusses the development and emergence of time-driven activity-based costing.

3.7 Emergence of Time-Driven Activity-Based Costing

The conventional ABC system aimed to measure product cost and customer profitability on a monthly basis. The latter is a goal befitting for motivating activities relating to process improvement, product pricing and customer relationships. However, the process required substantial resources to collect and process the data monthly. Additionally it required quite some resources to prepare management reports, for some organisations all this could possibly take more than thirty days to prepare (Kaplan & Anderson, 2007:15).

A solution to the challenges associated with conventional ABC has been devised, tested and implemented. The new approach is termed time-driven activity-based costing (TDABC). According to Kaplan and Anderson (2007:18), TDABC is quicker, cheaper and simplifies the costing process. This is done by eliminating the requirement of interviewing and surveying employees, so as to allocate resource costs to activities prior to driving them down to cost objects such as orders, products and customers. TDABC does not assign resource costs to cost pools on the basis of employee survey results (Barndt *et al.*, 2015:25).

TDABC is intended to eliminate problems with implementation through varying the collecting data method on activity times, and through the adjustment of the procedure

to calculate the activity cost. It takes an aggregate view of resources and uses time as its primary cost driver (Szychta, 2010:53).

TDABC regards time as the principal cost driver of cost since the majority of resources, such as employees, have measurable capacities based on the amount of time they work (Szychta, 2010:53). Other measures can also be used to establish capacities for example the storage capacity of warehouses (Kaplan & Anderson, 2007:23).

The TDABC model is a simplified model compared to the ABC model as it allocates indirect costs directly to the cost objects. Only two sets of estimates are required neither which are difficult to obtain. The first set of estimates is the calculation of the cost of supplying resource capacity, for example considering a department responsible for handling client orders. The TDABC model firstly calculates the cost of all the resources consumed and needed by this department to operate such as employees, management, occupancy, equipment and technology. The total cost is divided by the capacity, i.e. the time employees can actually perform the work is used to obtain the capacity cost rate (Kaplan & Anderson, 2007:18).

The second set of estimates TDABC requires is the capacity cost rate to allocate the departmental resource costs to cost objects. This is done by approximating the demand for resource capacity (usually time) that each cost object needs (Kaplan & Anderson, 2007:18).

This simplified method of ABC namely TDABC, requires the manager to forecast the practical capacity of the supplied resources (at a consolidated level) as percentage of their theoretical total capacity (Szychta, 2010:53).

In addition, TDABC does not need all customer orders to be the identical. It makes provision for the time estimates to differ on the basis of the varying demands by some customer orders, such as orders for dangerous goods and urgent orders. The TDABC model follows the actual processes used to accomplish the work throughout the organisation. As a result the TDABC system can capture much more complexities and variations than a conventional ABC model. This can be achieved without generating a massive and ever increasing demand for data estimates, processing capabilities or storage. A complex organisation using TDABC can therefore embrace

this complexity as opposed to being forced to use basic, simplified and often inaccurate ABC models (Kaplan & Anderson, 2007:18).

An analysis of the TDABC model done by Szychta (2010:57) reveals that it offers the following advantages:

1. It overcomes the challenges experienced especially by large entities during the phases of implementation and maintenance of the conventional ABC model. An example is that it is no longer a requirement to conduct regular interviews and surveys with employees to determine the spreading of work time of employees between numerous activities in a department.
2. The practical capacity of committed resources and resulting costs are estimated and assigned to activities and in turn to products and services. These costs, although it constitutes a separate grouping, affects that period's financial results.
3. It comprises non-standard activities in cost calculation (in the phase of calculating unit times of practical capacity consumption) by using time equations.
4. It is much simpler to update to reflect variations in operating conditions on account of to time equations.

On the other hand, a weakness of this approach is that departmental managers are responsible for making estimates as input for calculations. If these estimates are too arbitrary, substantial errors can occur which can lead to inaccurate information about product costs and -profitability (Szychta, 2010:57).

3.8 Activity-Based Costing in Cash Service Industry

ABC, as a cost allocation tool, has its origins in the manufacturing sector. Most of the literature on ABC is therefore applied and emphasized in a manufacturing environment. However, significant economic activity is occurring in the non-manufacturing environment. It is therefore critical to note that ABC principles are applicable to all types of business (Ashford, 2011:5). One such type of business is the service industry. Kaplan and Cooper (1998) found service organisations to be ideal candidates for ABC, as the majority of their costs are indirect/overhead costs. In addition, service organisations are more people-intensive than manufacturing

organisations. An increased need therefore exist to focus on the countless number of activities that are performed in order to create customer satisfaction. A critical success factor in the service industry is therefore to lower the “cost to serve” (Ashford, 2011:5).

The cash services industry, being part of the banking industry, is time conscious, with the aim of providing the highest value at the lowest cost and at the least amount of time. Research by Knoetze (2000:36) confirmed that efficiency and effectiveness are critical in this industry. Efficiency, which are focused on doing things right, controls the patterns of resources and consumption. Effectiveness, on the other hand, is focused on doing the right things, which is to generate profit. According to Knoetze (2000:36) there are two main inhibitors of efficiency and effectiveness, namely cross-subsidisation among customers and cross-functional internal processes. Cross-subsidisation adversely affects customer pricing schedules and as a result customer profitability reporting cannot be relied upon.

In the cash services industry, the pattern is to match competitors’ products without asking the fundamental question whether the product or relationship is profitable. TCS only allows for the allocation of direct costs, but obscures a product’s or customer’s true costs as a majority of the costs in the industry are fixed (Knoetze, 2000:36).

As in service industries, the most important cost is the skilled labour involved in the production of services, such as the cost of legal, accounting and actuarial teams. These costs are categorised as service overheads and can be compared to manufacturing overheads in a factory (Ashford, 2011:6). Skilled labour costs are considered service overheads as opposed to period cost and need a proper allocation base if true product or customer profitability is to be determined.

The next section presents the implementation steps of time-driven activity-based costing.

3.9 Implementation steps of TDABC

Ashford (2011:4) highlighted that to set up an activity-based program involves identifying and calculating an organisation’s cost drivers and cost buckets. This is

equivalent to the groundwork needed to re-engineer a business which includes (Ashford, 2011:4):

- Benchmarking: how an organisation compares with its peers?
- Activity analysis: how an organisation can improve? and
- Service level analysis: what are the customers willing to pay for?

Mahal and Hossain (2015:69) published six major decisions that should be made before designing an activity-based system:

1. Should the system be a standalone or should it be integrated with the existing cost system?
2. Should a formal design be reviewed and approved before implementation?
3. Who should take ownership of the system when completed?
4. How detailed should the system be?
5. Should the system focus on future or historical costs?
6. Should the initial design be simplex or complex?

As an improvement to ABC, TDABC totally skips the activity defining stage and as a result skips the need to assign the department's costs to the numerous activities that are performed by the department. The time-driven approach further avoids the costly, subjective and time consuming activity-surveying task of conventional ABC.

TDABC utilises time equations that directly and automatically allocate resource costs to the activities executed and transactions processed. Only two parameters must be estimated namely 1) the capacity cost rate for the department, and 2) the capacity consumption by each transaction processed in the department (Kaplan & Anderson, 2007:19)

Parameter 1: the capacity cost rate for the department.

The capacity cost rate is defined below:

$$\text{Capacity Cost Rate} = \frac{\text{Cost of Capacity Supplied}}{\text{Practical Capacity of Resources Supplied}}$$

Parameter 2: the capacity consumption by each transaction processed in the department. In most cases, this is the time taken to perform each transaction.

Conventional ABC uses a cost driver whenever activities, such as machine set-up, issuing a purchase orders, or processing a customer orders, take about the same amount of time. TDABC however, replaces cost drivers with estimated time required to perform each of these transactional activities. The time estimates can be determined by either conducting interviews with the relevant managers or by direct observation. Similarly to the estimation of practical capacity, precision is not critical; and moderate accuracy is acceptable. And different to the percentages that employees subjectively estimate for a conventional ABC model, the capacity consumption estimates in a time-driven model can be easily observed and validated (Kaplan & Anderson, 2007:20).

3.10 Critical Success Factors to implementing Activity-Based Costing

Critical factors for Company A to bear in mind for a successful implementation of either ABC or TDABC are as follows:

- **Management Support**

A high number of failures of ABC implementations can commonly be attributed to a lack of top management support and encouragement. When senior management is committed to the ABC implementation and openly supports it, it is a clear indication to the project team that their work is valued and it furthermore ensures that the project is focused on business issues (Wessels & Shotter, 2000:217). The involvement and support of an organisation's top management to an implementation project is crucial as it communicates to the rest of the employees the significance of the system development.

Rundora (2012:17) added that for an ABC implementation to be successful, top management must commit to a change in the cost accounting system. They must understand and embrace benefits that ABC can offer the organisation in establishing realistic and achievable objectives. The objectives have to be clear and simple so that it is understandable for all stakeholders.

- **Adequate employee resources**

Limited resources is one of major stumbling blocks in the implementation of ABC, and in many cases has prevented projects from even being started (Wessels & Shotter, 2000:217). In order to be successful, a project team should be able to spend adequate time on the ABC initiative.

- **Coherence with the organisation's goals and culture**

The ABC initiative must be aligned with the strategic goals of the organisation for it to succeed, if not, it is unlikely that the project team will gather information and buy-in from the rest of the organisation (Wessels & Shotter, 2000:218).

Research by Rundora (2012:17) identified the following critical success factors and descriptions to keep in mind when implementing ABC:

- **A multi-disciplinary project team should initiate and implement the ABC system in the organisation**

The team members have to share similar values and attitudes and be co-operative. To ensure the success of the project, a knowledgeable and committed project leader is critical. The individual must have suitable and sufficient experience in project implementation. The project team is responsible for clearly defining time frames, actions required and responsibilities. The project should be continuously monitored to track progress and if required, adjustments must be made so that targets can be achieved.

A study by Mahal and Hossain (2015:68) confirmed the above finding by Rundora (2012:17) that a cross-functional team rather than a project team consisting solely of members of the accounting department should be responsible for the design and implementation of an ABC system.

- **Education and training of employees on ABC**

The concerned employees of the organisation should be knowledgeable about ABC so that they can appreciate the complexity of the project and the resulting impact on the organisation. This will lead to open communication and better cooperation for implementing ABC in a cost-effective manner.

- **Access to outside expertise**

Access to outside expertise is critical when new software and concepts have been developed. The expertise available at the local educational institutions could be invaluable.

- **On-going feedback**

There should be on-going and constant feedback from the ABC project implementation team to top management and to lower level employees alike on the progress of the implementation of the ABC project.

- **Implementation**

Implementation should be simplified as much as possible. It could perhaps firstly be introduced as a pilot project.

Critical success factors have been studied and put in place in anticipation of the implementation of ABC. The management of Company A is the driving force behind the change from TCS to TDABC, and as a result all the financial and technical resources required for a successful implementation have been adequately provided. The implementation of ABC was prepared with special care to ensure maximum beneficiation for Company A.

3.11 Summary

The aim of this chapter was to address the second secondary objective, as set in Chapter 1 (section 1.3.2, page 10), namely the reviewing of existing literature on the fundamentals of cost allocation, traditional costing methods (TCM) and activity-based costing (ABC), as well as the emergence of time-driven activity-based costing (TDABC).

It was highlighted that, although TCS is cheaper and easier to implement and maintain, it does not offer much in terms of optimising cost usage, reducing process waste and errors, ensuring quality management and thereby offering reliable service level management. It was these shortcomings that led to the emergence of alternative costing models such as ABC.

ABC allocates costs based on cost-and-effect relationship. It is this process which enables the classification of more costs as direct in order to reduce the number of indirect cost pools and to accurately identify cost drivers, making cost allocation more accurate.

The benefits that can be derived from implementing ABC can be summarised as follows: more accurate allocation of overhead costs based on the actual consumption of the resources; recognition of cost drivers and activities; enabling management to see where the most important costs occur as well as what caused the costs to be incurred; improves pricing, marketing, product design and product mix - as a result leading to better decision making.

Challenges in the costly and cumbersome way of collecting data has seen the emergence of TDABC. TDABC uses time as primary cost driver. It is the usage of time as the principal measure of operating capacity of processes and duration of activities in an organisation that makes TDABC suitable for application in service entities.

Company A is implementing TDABC with the aim of performance improvement, which is evident in terms of time, cost, and quality. Activity-based information also allows managers to identify and eliminate non-value adding activities, and thus improve cost of quality.

The next chapter presents the empirical study, which follows a case study approach.

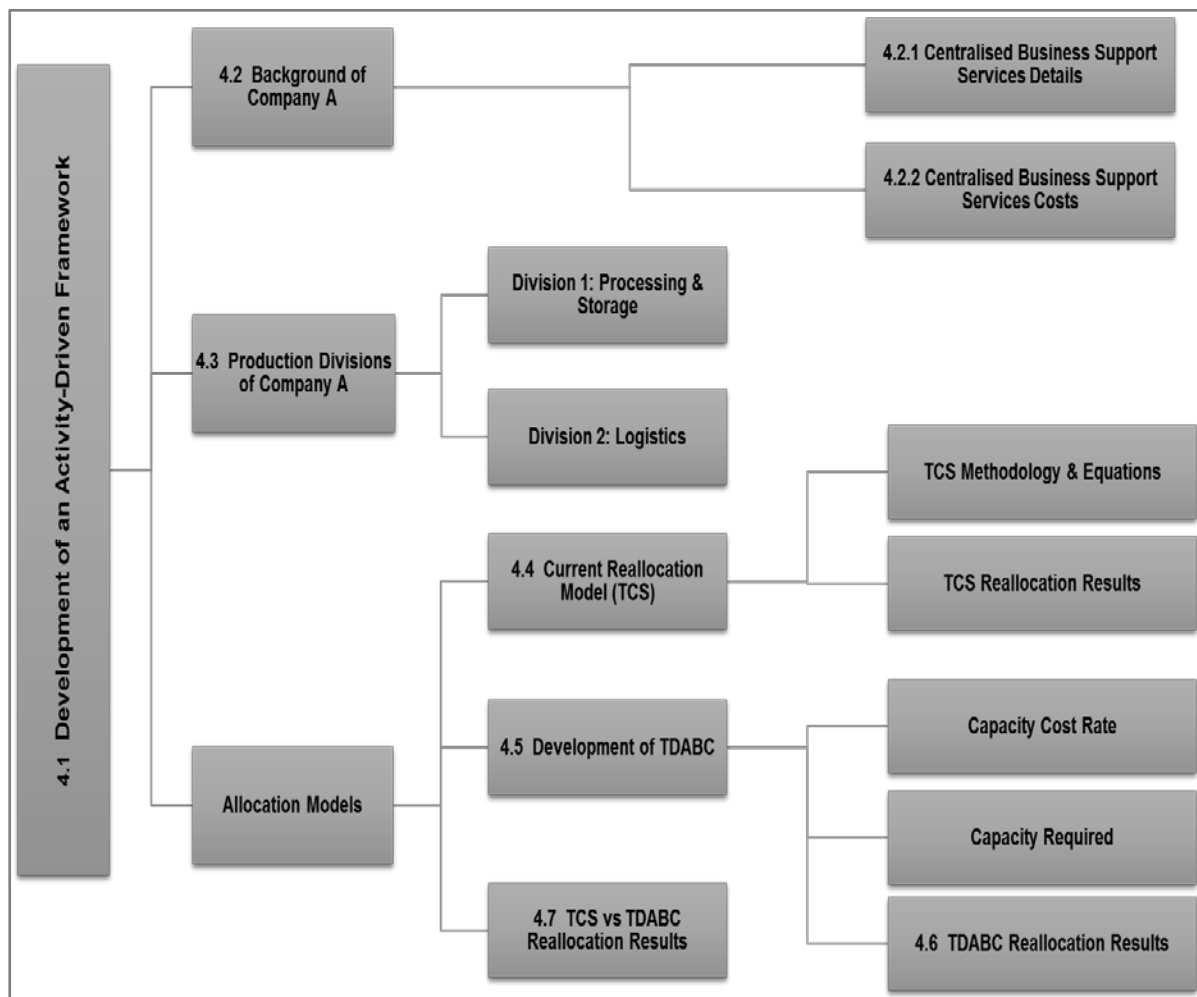
CHAPTER 4

4 DEVELOPMENT OF AN ACTIVITY-DRIVEN FRAMEWORK

4.1 Introduction

The aim of this chapter is to address the third secondary objective as set in Chapter 1 (refer section 1.3.2, page 10). This chapter aims to develop an activity-driven costing framework for Company A for improved product pricing and costing decisions. The data used to develop the framework was collected by conducting face-to-face interviews with managers of the eight business support services departments. Documents archived and ERP systems were analysed for further data collection. The empirical study is presented in line with Figure 4.1.

Figure 4.1: TDABC framework development flow diagram



Source: Own Research

4.2 Background of Company A

Company A is a leader in the cash services and solutions industry with a vision to expand into the rest of the South African Development Community (SADC). It provides cash logistics, guarding, processing and storage solutions for the banking and retail industry. Company A is looking at replacing the TCS currently in use with an easy to implement and manageable cost allocation system that is activity-driven, in order to provide management with more precise information regarding product cost and profitability. Management's objective is to implement an allocation system from which product and services costs reflect the true cost of product production.

The aim is to be able to identify non-value adding support activities that can be eliminated to save costs and also to identify costly activities that can be targeted for re-engineering. Business process re-engineering is the ultimate rethinking and radical redesign of a business process to realise dramatic improvements in critical contemporary measures of performance, such as speed, service, quality and cost (Parys & Thijs, 2003:3).

Company A has a centralised business framework to reduce costs while providing an effective business support service. The aim is to successfully equip the company to deal with the following challenges as per EY's Insights on Governance, Risk and Compliance report (EY, 2014:3):

- Slow growth in a mature market
- Influence of international players in the local market (globalisation)
- Foreign exchange price volatility
- Opportunities and threats of new technology and the digital age
- The ever-changing and increasing burden of regulatory compliance

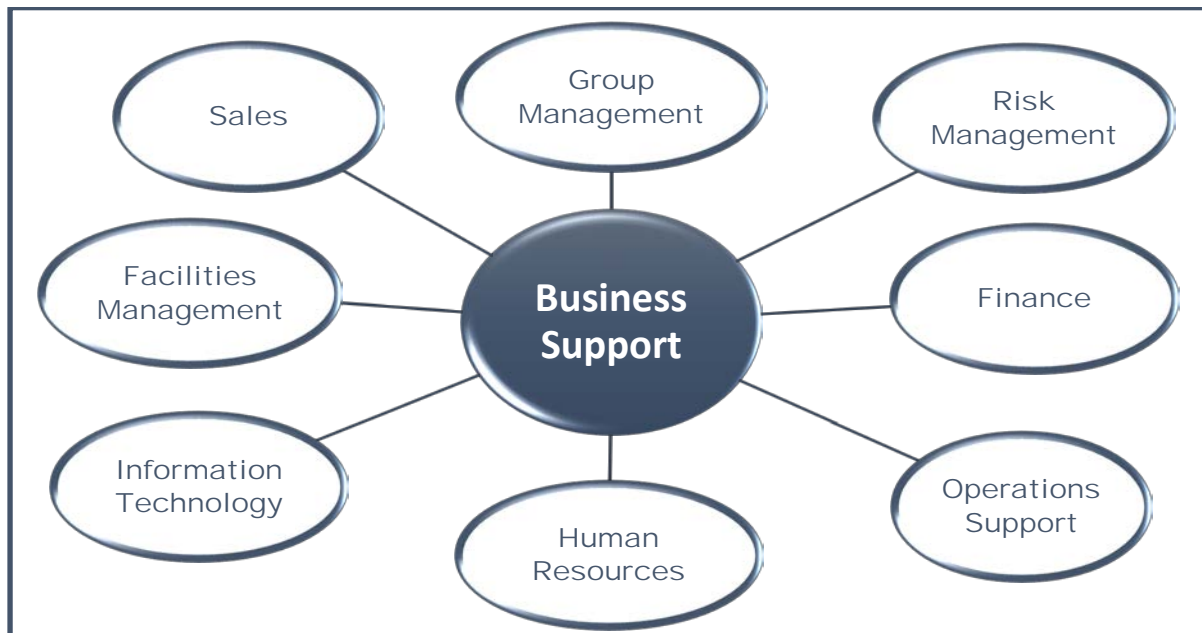
An area identified to achieve the set strategic objective of implementing an allocation system from which product and services cost reflects the true cost of product production is for Company A to improve the business support services' efficiency. Routine, transactional work was moved to the centralised business support office to specialists dedicated to processing it more efficiently and at a lower cost.

This left business free to be more agile and to focus on customer service. Back-office functions such as HR, Finance, Risk, Facilities Management and IT have been required to respond to this cost reduction agenda to ensure they deliver maximum value at minimum cost.

4.2.1 Centralised business support services

Company A has eight centralised business support services (also referred to as departments), as shown in Figure 4.2 below, that serve two divisions.

Figure 4.2: Company A's centralised business support services



Source: Own Research

Sales (Department 1): The main focus is to create opportunities to sell more products to existing and new customers; to manage customer relationships; to know and respond to customers' requests regarding products. The department's role include setting and achieving the set sales budget through effective and efficient market research and intelligence.

Group Management (Department 2): The role is to oversee operations of the organisation, to ensure the creation and implementation of a strategy designed to grow the business, also ensuring priorities and goals of the entire functional area are clear and understood. Group Management's team is responsible for the way company resources are utilised and funded. The department is also responsible for the engagement of key stakeholders such as shareholders, creditors and legislators regarding the broader organisational strategic planning.

Risk Management (Department 3): The risk management department provides a methodology to identify and analyse financial and non-financial risks and their impact to the organisation. The department contributes to cost saving by identifying cost-effective improvements to processes without adversely affecting quality of products or

client relationships. It also puts in place responses to risks that could adversely affect the business. Methods to mitigate identified risks include risk transfer, avoidance, elimination or control of risk through policies, procedures and guidelines.

Finance (Department 4): The department provides a cost control function and the associated reporting thereof. The department ensures that customers are invoiced and debtors collected timeously so not to adversely affect cash flow. It sets up treasury management policies to guide all those who deal with cash or cash equivalents. The finance department oversees the management of fixed assets and ensures that corporate tax and other financial legislative requirements are met. The department is also responsible for the employee payroll and ensures employees are paid timely and accurately.

Operations Support (Department 5): This centralised department supports all other departments to ensure standardisation across the company. The department analyses operational malfunctions, provides solutions and implement these solutions across the company. It addresses escalated issues from other businesses and adjust policies and procedures accordingly in order to address any shortfalls identified. It furthermore recommends process improvements to improve operational efficiency and cost-effectiveness.

Human Resources (Department 6): The human resources department manages the recruiting of permanent and temporary staff. Responsibilities include screening, conducting interviews, administering skills assessment and personality tests to match candidates with the right positions within the company. The department develops training programmes and conducts training for new recruits and existing employees alike. The department maintains the relationship between management and its employees by encouraging communication and fairness within the organisation.

The department also manages disagreements between employees and management, as well as between the management and labour unions or employee rights organisations. Moreover, the department is responsible for the interpretation and enforcement of labour and employment laws such as, the basic conditions of employment, equal employment opportunity, reasonable labour standards, benefits and as well as working hour requirements.

Information Technology (Department 7): The information technology department is responsible for the hardware, software, architecture and networking of computers in Company A. The department is responsible for creating new programs for the organisation, collaborating with outsourced programming specialists to create programs that would address the needs of the organisation, such as an application to manage human resources, tracking and tracing packed stock, processing work orders - to name only a few.

Duties include installing and setting up the computer network in the company, ensuring that the network is operating well and that all employees are able to communicate through the internet and company intranet. Lastly, the IT help desk provides support to computer users within the company. This includes installing new software, repairing or installing hardware, troubleshooting of problems and training employees how to use new software programs.

Facilities Management (Department 8): This department is in charge of the management of the premises. Responsibilities include building and grounds maintenance and the management of the procurement and contracts of these services, ensuring that buildings meet the health and safety requirements as set in legislation. The department also ensures effective and efficient space management and utilities usage.

The next section discusses the costs of these eight business support services departments.

4.2.2 Centralised business support services costs

The next step in the presentation of the empirical results is to outline the centralised business support services costs. In order to provide business support services by the eight departments discussed in the previous section, Company A incurred actual costs in excess of R 760 million for the 2017 financial year. This cost is anticipated to increase by 11.4% for the 2018 financial year. Business support services accounts for a significant 25.6% of total expenditure of Company A, which must be allocated and absorbed by products and services.

The accuracy of product and services pricing is reliant on the accurate allocation of business support services, an allocation based on consumption of the resource. Below is the cost of business support services broken down into departments, as shown in Table 4.1:

Table 4.1: Annual business support services cost

	2017 Actuals	2018 Budget
Business Support Services	760 052 758	847 044 617
Sales	43 403 908	44 871 634
Group Management	48 598 591	26 150 957
Risk Management	69 099 098	65 030 789
Finance	131 859 035	141 872 140
Operations Support	200 326 888	281 555 030
Human Resources	70 886 989	90 244 917
Information Technology	176 093 093	166 078 350
Facilities Management	19 785 157	31 240 800

Source: Own Research

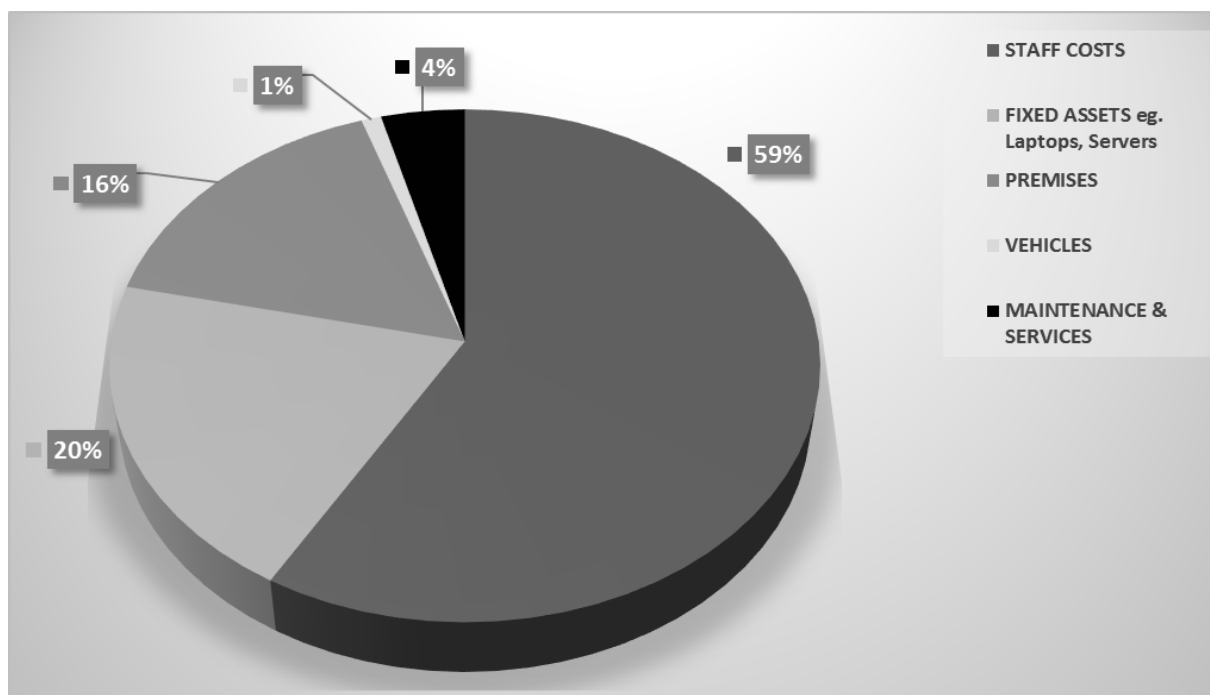
A further analysis of the total business support office costs indicates that *staff costs* account for close to three fifths of the centralised services' annual expenditure (refer Figure 4.3). This is in line with the main purpose of the office which is to be run by experts and specialists in the industry. The staffing costs include employees' salaries, staff training and travel costs.

Premises costs are costs incurred for the accommodation of the centralised business support services. The grouping of costs include the office rental, utilities, telephone, cleaning and security. *Vehicles costs* are incurred as a result of the provision and usage of company cars. *Fixed assets* are the annual amortisation of assets including printers, laptops, database servers, furniture and presentation equipment.

Business support services do not generate any revenue, as the departments provide a service only to the two internal divisions. The two internal divisions are the profit centres, as they are direct producers of sellable products as opposed to the business support services departments that are cost centres.

A graphical summary of the business support services cost breakdown is shown in Figure 4.3.

Figure 4.3: Annual business support services cost breakdown



Source: Own Research

4.3 Divisions of Company A

Company A offers services to their customers which can be split into two divisions: Processing and Storage, and Logistics.

- **Processing and Storage (Division 1)**

This division is responsible for the processing and facilitation of all cash handling and deposit processing services. This division offers the market five products:

- ✓ Processing & packing of cash
- ✓ Notes sorting
- ✓ Coin management
- ✓ Solutions for foreign currency
- ✓ Retail cash deposit processing

- **Logistics (Division 2)**

The division is responsible for the physical transfer of items of high monetary value from one location to another, using armoured, satellite tracked vehicles and armed guards. This division offers the market three products:

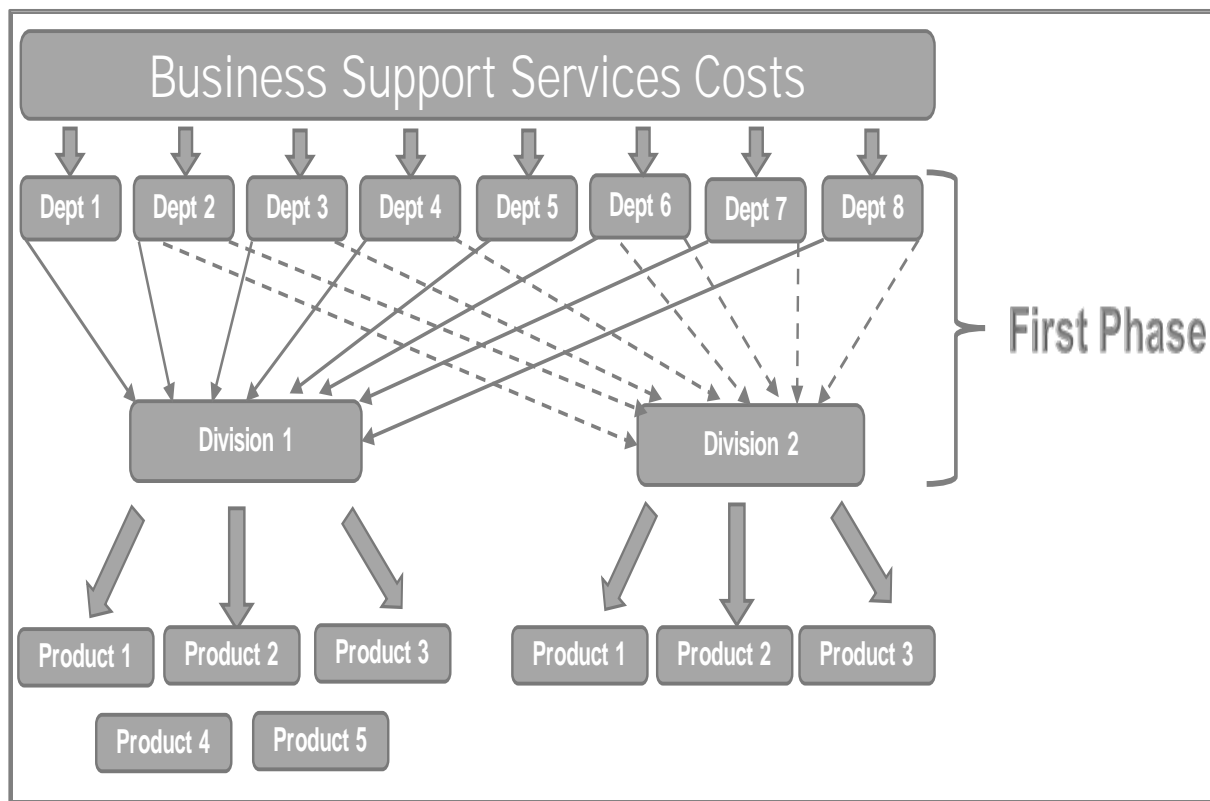
- ✓ Cash in transit
- ✓ Guarding for bank branches
- ✓ ATM solutions

As mentioned above, Company A has a strategic objective to dominate the SADC markets. This vision makes it imperative to understand which division activities and products drive the business support service costs and to what degree. This consumption rate has a direct impact on product pricing. Moreover, for product pricing to be accurate and competitive, it should reflect the costs that the division utilises.

This knowledge is key for management decision making, including: 1) which products to produce and which to terminate, and 2) determining customer profitability and which customers require intervention.

Figure 4.4 shows the current two-step process of business support services cost allocation to products.

Figure 4.4: Company A's business support services cost reallocation model



Source: Own Research

4.4 Company A's current allocation model

As indicated in Figure 4.1, the next section highlights Company A's current allocation model. Currently business support services costs are arbitrarily allocated to the two divisions using revenue earned by each division as the basis for the allocation. The division that therefore generates the most revenue carries the majority of the business support services costs.

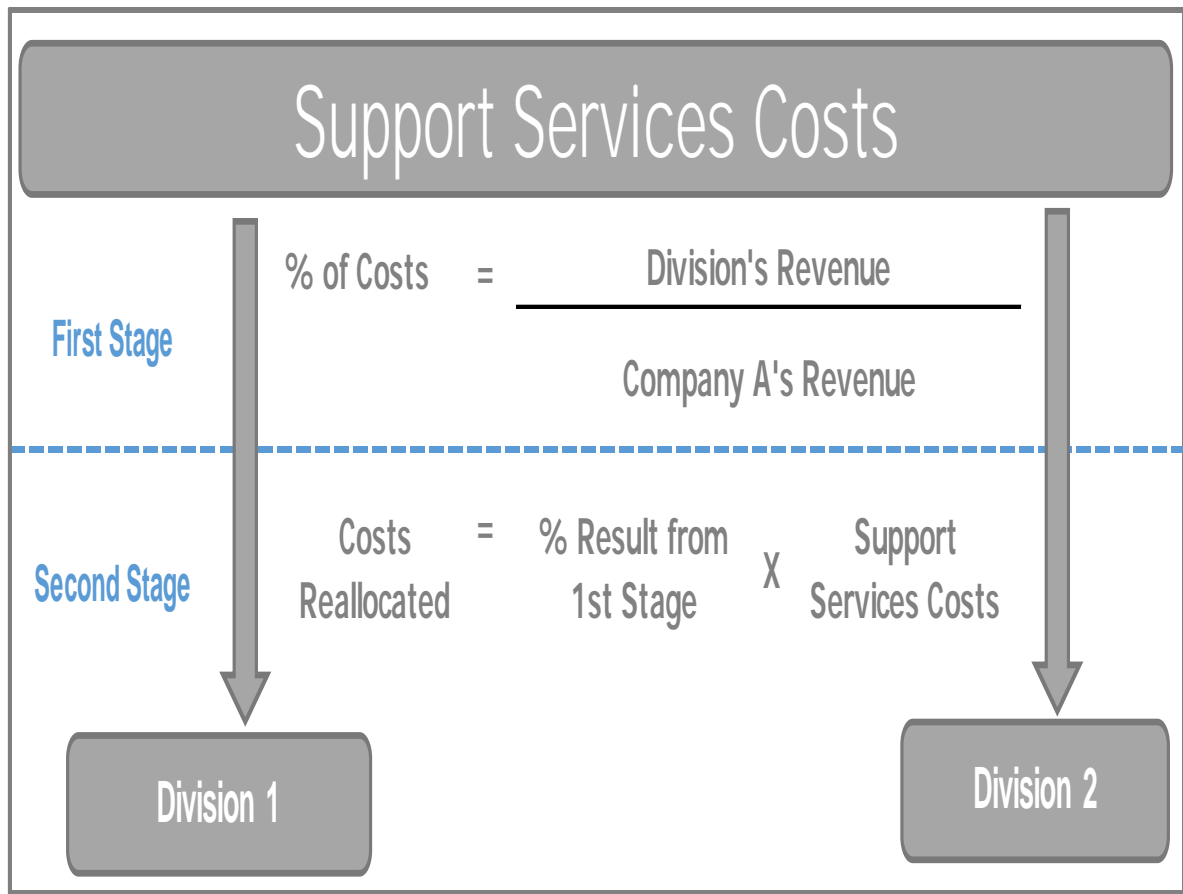
This system can therefore inaccurately reflect the resource consumption rate of divisions, and as a result products can be inaccurately priced - hampering product marketability.

Currently the allocation of the business support services cost are done in two stages:

1. Firstly, the revenue earned by a division is divided by the total revenue earned by Company A, to obtain a percentage.

2. Secondly, the percentage calculated in the step above is used to calculate the portion of business support services costs that the division will absorb. These are the costs that will be passed onto the products produced by the division.

Figure 4.5: Business support services reallocation equations



Source: Own Research

Company A operates in a mature market, the calculated percentage is relatively stable. The allocated percentage for the 2017 costs incurred (refer Table 4.1, page 54) is shown in Table 4.2:

Table 4.2: Business support services reallocation based on TCS

	2017 Q1	2017 Q2	2017 Q3	2017 Q4	Total 2017
Revenue:	- 620 971 341 -	641 651 569 -	621 495 471 -	628 646 367 -	2 512 764 748
Division 1	- 267 822 527 -	287 958 425 -	273 200 281 -	274 344 732 -	1 103 325 965
Division 2	- 353 148 814 -	353 693 144 -	348 295 190 -	354 301 634 -	1 409 438 783
Overhead Allocation % Portion:					
Division 1	43%	45%	44%	44%	44%
Division 2	57%	55%	56%	56%	56%
Total Expenses					
	176 632 533	187 683 082	182 069 101	213 668 042	760 052 758
Overhead Allocation ZAR Portion:					
Division 1	76 180 925	84 227 838	80 034 903	93 245 909	333 689 575
Division 2	100 451 608	103 455 243	102 034 198	120 422 133	426 363 183

Source: Own Research

Table 4.3 shows the cost portions of business support services Division 1 and 2 respectively, absorbed in the 2017 financial year. The two divisions' combined cost is R760 million, as shown in Table 4.1.

Table 4.3: Business support services costs absorbed by divisions

Department	Division 1 ZAR	Division 2 ZAR	Total ZAR
Sales	19 058 155	24 345 754	43 403 908
Group Management	21 339 080	27 259 511	48 598 591
Risk	30 340 615	38 758 482	69 099 098
Finance	57 897 778	73 961 256	131 859 035
Operations	87 920 413	112 406 475	200 326 888
HR	31 125 658	39 761 331	70 886 989
IT	77 320 442	98 772 650	176 093 093
Facilities	8 687 434	11 097 723	19 785 157
Total	333 689 575	426 363 183	760 052 758

Source: Own Research

By adding Division 1 and Division 2's totals (R334 million + R426 million), as presented in Table 4.3 above, the total business support services cost for 2017 is proved.

The next step is to develop a TDABC framework for Company A.

4.5 Developing a TDABC framework for Company A

The steps followed to design a TDABC framework for Company A were expanded from discussions in Chapter 3 (refer section 3.9, page 47). Summarised guidelines were provided by Kaplan and Anderson (2007:175) as follows:

- i. **Business analysis:** Interviews were conducted with relevant departments' managers and supervisors to define each department's major activity groups and activities. Additionally, transactional drivers were further identified, their source system and developed time estimates noted.

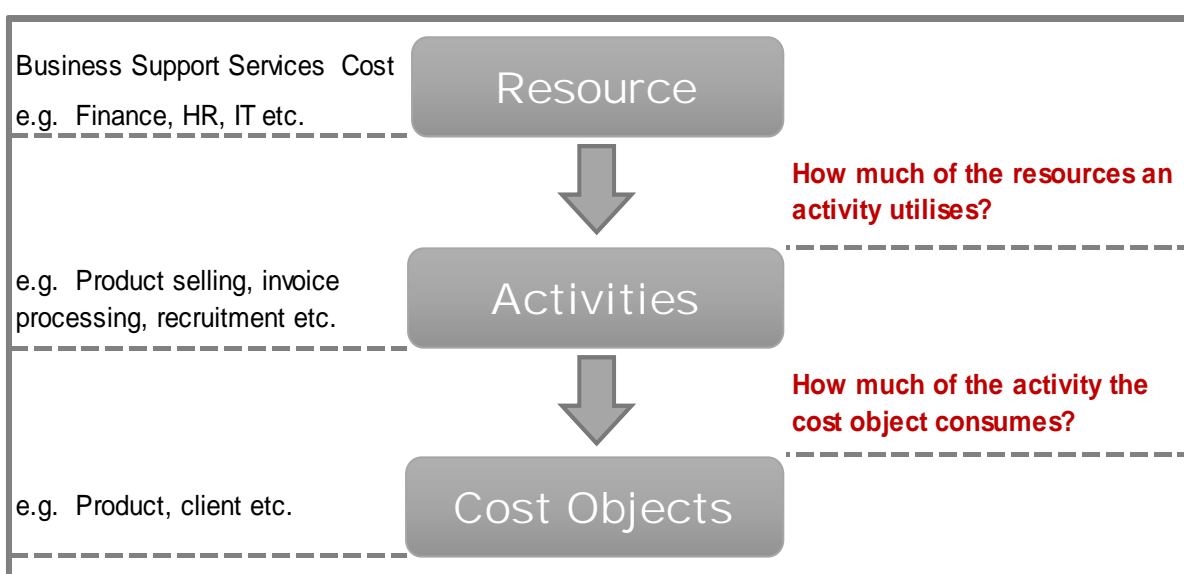
- ii. **System integration:** Data on cost drivers was collected from financial and operational source systems. Data was reviewed for reasonableness and further investigations were done on questionable data and anomalies.
- iii. **Model development:** Operations of departments were modelled and defined and equations loaded into the system.
- iv. **Business performance management reporting:** The final step was the designing of the dashboard for reporting and analyses of information and results.

The model to reallocate Company A's business support services cost to identify cost objects have answered two key questions:

- How much of the resources does an activity utilise?
- How much of the activity does the cost object consume?

The development of an activity-driven framework is centred around the answering of two questions, as described above. Figure 4.6 further elaborates on what this study considers as resources, activities and cost objects.

Figure 4.6: Company A's TDABC model



Source: Own Research

Capacity cost rate

As explained in Chapter 3 (refer section 3.9, page 47), the two parameters needed to allocate overhead costs, or in this case the business support services cost, are: 1) the capacity cost rate for the department, and 2) the capacity usage by each activity processed in the department. The capacity cost rate was first to be determined.

The capacity cost rate equation (as presented in Chapter 3, page 47) is summarised as follows:

$$\text{Capacity Cost Rate} = \frac{\text{Cost of Capacity Supplied}}{\text{Practical Capacity of Resources Supplied}}$$

The cost of capacity, i.e. the total business support services cost as reflected in Table 4.1 (page 59), was sourced from Company A's enterprise resource planning (ERP) system.

Secondly, the practical capacity of resources supplied was determined by calculating the practical capacity of the employees and departments of Company A. The employees' number of working days per month were therefore translated to hours.

Employees at Company A's business support services' office work a 9 hour day in line with the South African Basic Conditions of Employment Act (BCEA). The equation used to calculate employee capacity is shown below, while the result of the calculations is reflected in Table 4.4.

Employee capacity equation:

$$\text{Employee Capacity} = \frac{\text{No. of Working Days in a month}}{\text{month}} \times \text{Working Hrs per Day}$$

Table 4.4: Employee capacity calculation (in hours)

Timeframe	Number of Working Days	Working Hours per Day	Capacity per Employee
January 1 - 31	21	9	189
February 1 - 28	20	9	180
March 1 - 31	22	9	198
April 1 – 30	17	9	153
May 1 – 31	22	9	198
June 1 – 30	21	9	189
July 1 – 31	21	9	189
August 1 – 31	22	9	198
September 1 – 30	20	9	180
October 1 – 31	22	9	198
November 1 – 30	22	9	198
December 1 – 31	19	9	171
Average Working Days in Year	249	9	2 241

Source: Own Research

The total capacity calculated per employee for 2017 was 2 241 hours. Leave and normal idle time were not included in the calculation of employee capacity as the final results will not change even if they had been taken into account.

Departmental capacity was calculated as the total hours that an employee in a department offers, times the number of employees in the 8 departments of business support services.

Departmental Capacity (HRS)	=	Employee Annual Capacity (HRS)	X	No. of Employees in Dept
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The results are presented in Table 4.5.

Table 4.5: Departmental capacity calculation (in hours)

Department	Av Employee Capacity	No. of Employees	Dept Practical Capacity
S0			
Sales	2 241	38	85 158
Group Management	2 241	6	13 446
Risk Management	2 241	101	226 341
Finance	2 241	70	156 870
Operations Support	2 241	168	376 148
Human Resources	2 241	146	327 526
Information Technology	2 241	43	96 363
Facilities Management	2 241	9	20 169

Source: Own Research

The group management costs are the highest, as their remuneration is higher due to their specialised skills. See below for departmental cost rate equation and calculation results:

Capacity Cost Rate	=	Cost of capacity	/	Dept Annual Capacity (HRS)
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The departmental cost rate per hour is reflected in Table 4.6 on the next page. The cost of capacity is sourced from the ERP system of Company A, as reflected in the business support services cost in Table 4.1 (refer page 59), while the departmental practical capacity is reflected in Table 4.5.

Table 4.6: Departmental cost rate per hour

Department	Cost of Capacity (ZAR)	Dept Practical Capacity (HRs)	Cost per HR (ZAR)
Business Support Services	760 052 758	1 302 021	8 827
Sales	43 403 908	85 158	510
Group Management	48 598 591	13 446	3 614
Risk Management	69 099 098	226 341	305
Finance	131 859 035	156 870	841
Operations Support	200 326 888	376 148	533
Human Resources	70 886 989	327 526	216
Information Technology	176 093 093	96 363	1 827
Facilities Management	19 785 157	20 169	981

Source: Own Research

Capacity required

The second estimate needed was for the departmental activities and time required to perform each transaction. Departmental activities and percentage of resources consumed were obtained through interviews with relevant departmental managers and process engineers.

Table 4.7: Departmental capacity percentage utilisation split

Department	Activities	% Time
Sales	Product & service sales	53%
	Client relationship management	21%
	Market analysis & product research	27%
Group Management	Strategic planning	34%
	Employee development & motivations	33%
	Control and coordination of the overall company structure	33%
Risk	Internal risk identification, analysis & neutralisation	48%
	Risk assessment of new business & employees	13%
	Contract negotiations & legal services	9%
	Investigations of threats & losses to the business	31%
Finance	Billing & Cashflow management	25%
	Financial statement management	32%
	Procurement & product costing management	13%
	Financial analysis & management	14%
	Employee benefits	16%
Operations	Operations performance management	78%
	Process re-engineering	5%
	Process efficiencies e.g. minimise stand-by times	18%
HR	Employee recruitment, administration & relations	72%
	Employee training & development	20%
	Marketing & communication	8%
IT	IT infrastructure	73%
	IT solutions & innovation	11%
	IT stay in business projects	16%
Facilities	Premises efficiency management	40%
	Security & maintenance processes	60%

Source: Own Research

4.6 TDABC framework for Company A

The TDABC model was developed as follows:

- Firstly: The major departmental activities were identified. Thereafter each activity was allocated a percentage of the capacity it utilises.
- Secondly: The departmental activities resource consumption calculated above was further divided between the two divisions, again according to their consumption.
- Thirdly: The allocated time was multiplied by the departmental cost rate calculated in Figure 4.11 above. Results on the next page.

The departmental activity and utilisation identification (as reflected in Table 4.8) is a result of the face-to-face interviews conducted with the relevant departmental managers and the analysis of audited financial transactions and / or departmental registers of work performed.

Table 4.8: Divisional capacity % utilisation

Department	Activities	Basis of Split	Division 1 %	Division 2 %
Sales	Product & service sales	Division client serviced	0%	100%
	Client relationship management	Manager interview	50%	50%
	Market analysis & product research	Manager interview	30%	70%
Group Management	Strategic planning	Manager interview	50%	50%
	Employee development & motivations	Manager interview	50%	50%
	Control and coordination of the overall company structure	Manager interview	50%	50%
Risk	Internal risk identification, analysis & neutralisation	Internal audit plan	46%	54%
	Risk assessment of new business & employees	Average number of assessments registered	50%	50%
	Contract negotiations & legal services	Manager interview	50%	50%
	Investigations of threats & losses to the business	Incidents register	10%	90%
Finance	Billing & Cashflow management	Invoices processed in the ERP system	62%	38%
	Financial statement management	No. of transaction processed monthly in the ERP	45%	55%
	Procurement & product costing management	No. of procurement transaction in the ERP syst	60%	40%
	Financial analysis & management	Manager interview	50%	50%
	Employee benefits	No. of Employees	35%	65%
Operations	Division 1's performance management	Manager interview	56%	44%
	Division 2's performance management	Manager interview	100%	0%
HR	Employee recruitment, administration & relations	Manager interview	40%	60%
	Employee training & development	No. of Employees	35%	65%
	Marketing & communication	Manager interview	50%	50%
IT	IT infrastructure	Audited industry register	70%	30%
	IT solutions & innovation	Manager interview	60%	40%
	IT stay in business projects	Manager interview	60%	40%
Facilities	Premises efficiency management	No of centres	80%	20%
	Security & maintenance processes	Manager interview	50%	50%

Source: Own Research

Table 4.9: Business support services costs absorbed as per TDABC split

Department	Activities	Time in HRs	Time in ZAR	Division 1 ZAR	Division 2 ZAR
Sales	Product & service sales	39 775	22 806 661.29	-	22 806 661
	Client relationship management	15 602	8 946 311	4 473 155	4 473 155
	Market analysis & product research	20 340	11 662 918	3 498 875	8 164 043
Group Management	Strategic planning	4 064	16 523 521	8 261 760	8 261 760
	Employee development & motivations	3 944	16 037 535	8 018 767	8 018 767
	Control and coordination of the overall company structure	3 944	16 037 535	8 018 767	8 018 767
Risk	Internal risk identification, analysis & neutralisation	95 889	32 933 094	15 055 629	17 870 278
	Risk assessment of new business & employees	25 160	8 641 248	4 320 624	4 320 624
	Contract negotiations & legal services	17 642	6 059 185	3 029 592	3 029 592
	Investigations of threats & losses to the business	62 500	21 465 572	2 146 557	19 319 014
Finance	Billing & Cashflow management	34 355	32 487 009	20 141 945	12 345 063
	Financial statement management	44 459	42 042 011	18 918 905	23 123 106
	Procurement & product costing management	18 188	17 199 005	10 319 403	6 879 602
	Financial analysis & management	20 209	19 110 005	9 555 003	9 555 003
	Employee benefits	22 230	21 021 006	7 357 352	13 663 654
Operations	Division 1's performance management	152 512	91 375 531.51	91 373 870.51	-
	Division 2's performance management	181 842	108 948 222	-	108 948 222
HR	Employee recruitment, administration & relations	208 991	50 886 279	20 354 512	30 531 768
	Employee training & development	57 675	14 042 970	4 915 040	9 127 931
	Marketing & communication	24 469	5 957 739	2 978 870	2 978 870
IT	IT infrastructure	62 116	127 698 791	89 389 153	38 309 637
	IT solutions & innovation	9 625	19 788 180	11 872 908	7 915 272
	IT stay in business projects	13 915	28 606 122	17 163 673	11 442 449
Facilities	Premises efficiency management	7 129	7 867 929	6 294 343	1 573 586
	Security & maintenance processes	10 799	11 917 228	5 958 614	5 958 614

Source: Own Research

4.7 TCS vs TDABC

The allocation of business support services cost between Division 1 and Division 2, using the two cost allocation methods of TCS and TDABC, resulted in a variance of R40 million between the two divisions. Alternatively it can be said that the results indicate that there is a R40 million cross subsidisation between Company A's two divisions (refer to Table 4.9, p 74). Division 1 is absorbing 5% less costs than it utilises to produce its five products. This definitely affects managements' decisions, as product and client profitability are distorted, leading to inaccurate product pricing and expansion decisions. This finding is in line with what Peter Drucker found in 1963, as cited by Cardos and Pete (2011:155). He posited that traditional costing systems often lead to cross subsidisation between products.

Table 4.10: Variance between two cost allocation models

Department	Current Model ZAR	TDABC Model ZAR	Variance ZAR
Division 1	333 689 575	373 417 319	(39 727 744)
Division 2	426 363 183	386 635 438	39 727 744
Total	760 052 758	760 052 758	-

Source: Own Research

In the current cost allocation model used by Company A, Division 1 carries 44% of business support services costs (driven by an arbitrary allocation), which is in turn reallocated to the products produced by this division. The R333.7 million is absorbed into product cost, resulting in its effect on products price and marketability.

It was determined that the highest under-recovered business support services department is IT, which is mainly driven by Division 1's heavy reliance on technology. This is slightly offset by reduction in sales costs, as Division 1 specialises in few bulk customers. Expansion in Division 1 is predominantly current customers utilising more of the current or new services.

From the results it is clear that the expansion of Division's 1 products could result in losses, as product prices currently set will be inadequate to cover costs - resulting in increase in business support services such as the IT department's costs, e.g. number of users and increase in servers.

Table 4.11 reflects the detailed analysis per department of variances in Division 1.

Table 4.11: Division 1's variances analysis

Division 1

Department	Current Model ZAR	TDABC Model ZAR	Variance ZAR
Sales	19 058 155	7 972 031	11 086 124
Group Management	21 339 080	24 299 295	(2 960 216)
Risk	30 340 615	24 552 403	5 788 213
Finance	57 897 778	66 292 607	(8 394 829)
Operations	87 920 413	91 373 871	(3 453 457)
HR	31 125 658	28 248 421	2 877 237
IT	77 320 442	118 425 735	(41 105 292)
Facilities	8 687 434	12 252 957	(3 565 523)
Total	333 689 575	373 417 319	(39 727 745)

Source: Own Research

On the other hand, Division 2 carries 56% of business support services costs. According to the current traditional methodology, this cost is then reallocated to the 3 products produced by this division. The R426.4million is absorbed into product, overstating the cost of producing these products, resulting in high prices and rendering the company uncompetitive in the market.

Division 2's products are overpriced. Management strategy might be to divest from this market as they might consider Company A not being the lowest cost producer in

the industry. Such a decision will be devastating, as Division 2 is currently subsidising business support services cost by over 5%. However, an expansion could drive profitability of clients and Company A.

Table 4.12: Division 2's variances analysis

Division 2

Department	Current Model ZAR	TDABC Model ZAR	Variance ZAR
Sales	24 345 754	35 443 859	(11 098 105)
Group Management	27 259 511	24 299 295	2 960 216
Risk	38 758 482	44 539 509	(5 781 027)
Finance	73 961 256	65 566 427	8 394 829
Operations	112 406 475	108 948 222	3 458 253
HR	39 761 331	42 638 568	(2 877 237)
IT	98 772 650	57 667 358	41 105 292
Facilities	11 097 723	7 532 200	3 565 523
Total	426 363 183	386 635 438	39 727 745

Source: Own Research

The chapter is concluded with a summary of Chapter 4.

4.8 Summary

The aim of this chapter was to address the third secondary objective, as set in Chapter 1 (refer section 1.3.2, page 10), namely to develop an activity-driven costing framework for Company A for improved product pricing and costing decisions. A TDABC model was developed for Company A and compared to the current traditional standard costing system (TCS) in use. The variances between the two costing models were analysed. The 2017 actual business support services costs were selected and reallocated to identical divisions to compare the two costing methodologies.

A comparison of the two methodologies revealed that, under the current traditional costing system, there is cross subsidisation between the two departments. This finding agrees with Peter Drucker's comment in 1963 that traditional costing systems' lack of relatedness and relevancy leads to subsidisation between products and their costs (Cardos & Pete, 2011:155). Division 2 is carrying over 5% more costs than it consumes. This has resulted in products of Division 2 being overpriced and uncompetitive as a result of this overhead burden.

By implementing TDABC, the management of Company A obtains a better understanding of which division consumes how much of which business support services resources. The implementation of TDABC results in a consumption-driven allocation of business support services costs. Company A will have more precise information to accurately cost products and services. This information will lead to better resource planning, elimination of waste and enlightened management decision making.

The next and final chapter discusses the findings and conclusion and provides recommendations.

CHAPTER 5

5 FINDINGS AND RECOMMENDATIONS

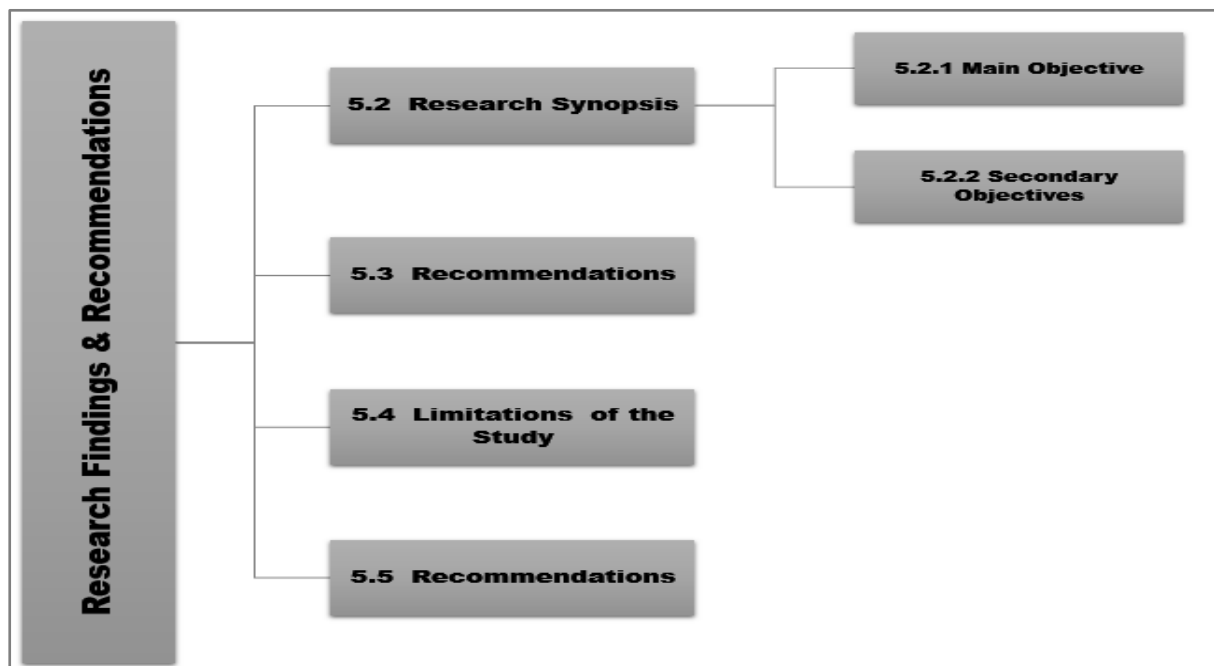
5.1 Introduction

The objective of the chapter is to address the final secondary objective of concluding the research by providing recommendations based on the findings of the empirical study, and substantiated by the literature review. The main objective of this study is to develop an activity-driven costing framework for Company A, a South African cash services company.

In Chapter 1 (section 1.2, page 9) the research problem described Company A as being a major provider of cash services for the South African market and that it had a monopolistic advantage. Moreover, with the entry of new players, Company A has been forced to manage and control costs to ensure improved product pricing and costing decisions. Özkan and Karaibrahimoğlu (2013:420) emphasise that cost and quality have become differentiating factors providing companies a competitive advantage. The question was therefore raised whether the development of an activity-driven costing framework could lead to improved product pricing and costing decisions in Company A.

The rest of the chapter is structured as follows:

Figure 5.1: Chapter 5 flow diagram



Source: Own Research

5.2 Research Synopsis

An activity-driven costing framework was developed and compared against the current TCS system of Company A. The current TCS system was compared against the developed TDABC cost allocation system, using the 2017 business support services costs of Company A. The resulting variances between the two cost allocation systems were then analysed.

5.2.1 Main Objective

The main objective of this study was to develop an activity-driven costing framework for Company A, a South African cash services company. The purpose of the framework was to provide Company A with improved costing information for management decision purposes (Chapter 1, page 9) by developing a framework that would allocate overhead costs more accurately and reliably.

Company A's vision is to defend its position as the local prominent player and as a result it is under pressure to optimise its business processes and to reduce costs.

Accurate product costing has become key if the company is to remain cost relevant in the industry (Chapter 1). The motivation for Company A to implement an activity-driven costing framework is to provide accurate and reliable information on product costs by accurately identifying and assigning overhead costs to products and services.

To achieve the above objectives, the capacity cost rates for each of the business support services of Company A were determined (refer Table 4.6, page 70). Departmental activities and capacity usage of each of the business support services (refer Table 4.7, page 71) was established through conducting semi-structured interviews with the relevant managers of the respective business support services. Furthermore, data from the company's ERP system and departmental registers was analysed.

The developed TDABC model used resource cost and consumption to allocate costs, as opposed to the TCS model that uses a revenue earned model, which for the divisions is not the driver of business support services resources consumption. As a result, TDABC allocated business support services costs more accurately and realistically.

The findings of the comparison of the two cost allocation models revealed that there is a 5% business support services cross subsidisation between the two divisions of Company A. This inaccurate allocation of costs has led to Division 1 being reallocated R40 million less than it consumes. This inaccurate reallocation of business support services costs has resulted in the under-pricing of Division 1's products:

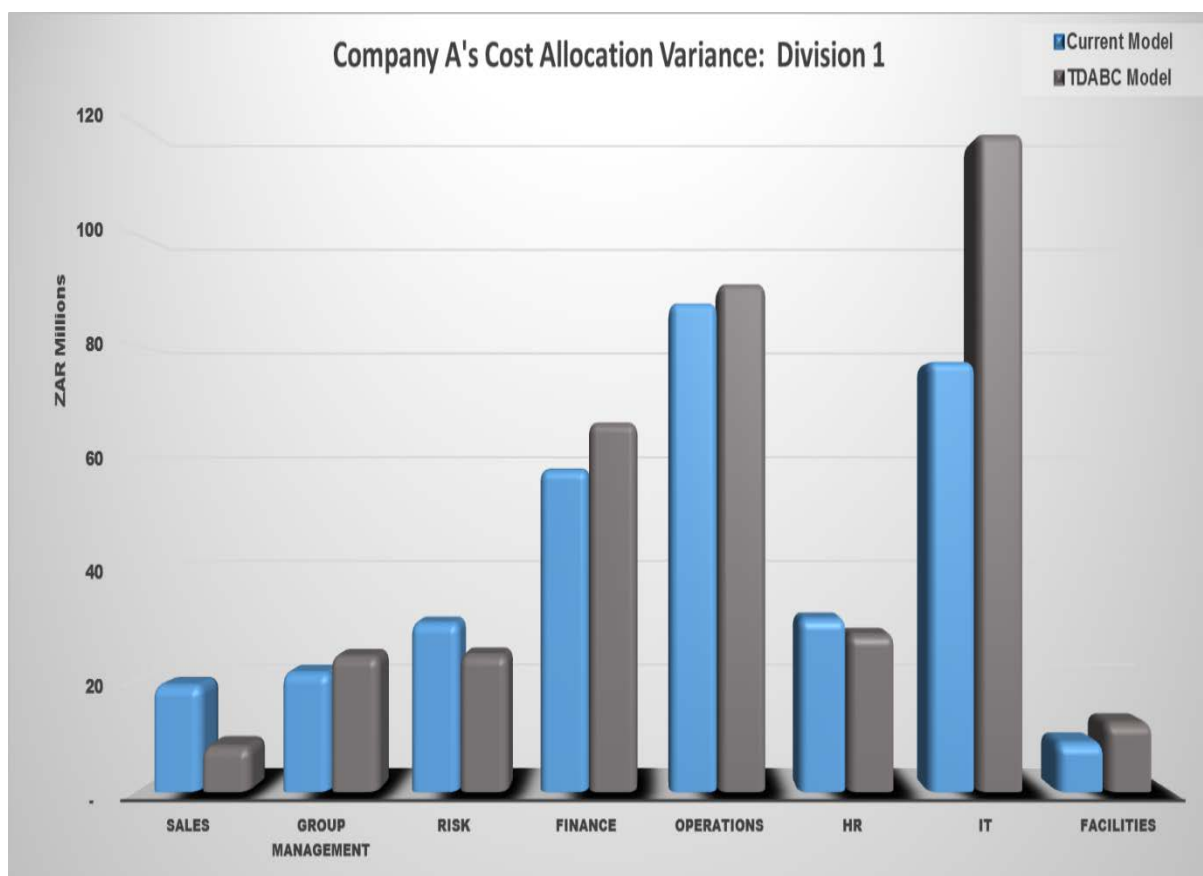
- ✓ Processing & packing of cash
- ✓ Notes sorting
- ✓ Coin management
- ✓ Solutions for foreign currency
- ✓ Retail cash deposit processing

This could lead the management of Company A to drive inaccurate strategies, including driving the rapid expansion of Division 1's products. Such an expansion drive could lead to an unforeseen increase in business support services, in turn reducing the profitability of Company A.

The effects of business support services misallocation, using the current TCS cost allocation method on Division 1 when compared to an activity-driven framework, have been summarised in Figure 5.2 below. The most significant variances are the under-allocation of IT services. However, this is offset by an over allocation on Sales, Risk and HR. The results of the newly developed TDABC framework are aligned with activities performed by Division 1, which is therefore an added benefit of this TDABC framework.

Division 1 is highly reliant on technology, but has less risk exposure and employees than Division 2. The division also specialises in bulk orders and as a result has very few, but large clients, and therefore the sales team dedicated to this division is smaller.

Figure 5.2: TCS vs TDABC for Division 1



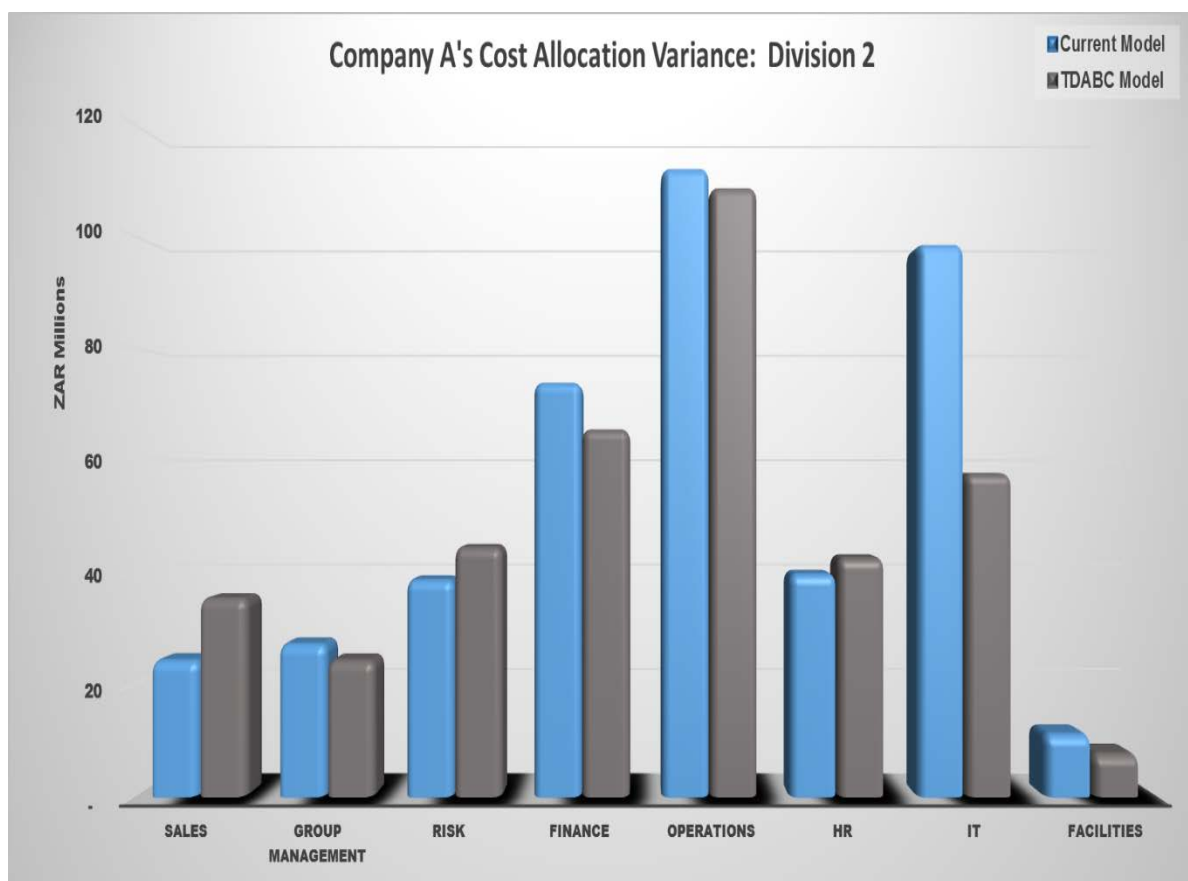
Source: Own Research

On the other hand, the research found that Division 2's products (cash in transit, guarding and ATM solutions) have been overpriced as a result of using revenue to

allocate business support services cost in the current TCS cost allocation method. The latter might lead the management of Company A to make a strategic decision to divest from this market, as they might consider Company A not to be the lowest cost producer in the industry. Such a decision would be devastating to Company A, as Division 2 is currently subsidizing Division 1's products and services when using the current TCS based on revenue.

An expansion strategy of Division 2 could drive profitability of Company A higher, but due to incorrect costing information being provided by TCS, it is a strategy that management would not consider. The effects of business support services misallocation by TCS on Division 2, when compared to an activity-driven framework, have been summarised as in Figure 5.3 below.

Figure 5.3: TCS vs TDABC for Division 2



Source: Own Research

It is clear from the findings that the implementation of an activity-driven costing framework would lead to improved product pricing and costing decisions in Company A.

Notwithstanding the ease of calculation and cost effectiveness of the current TCS, it has resulted in distorted costing information which has adversely affected Company A's competitiveness, as products and services were priced incorrectly. This was adversely affected management's decisions regarding product and market strategy. To achieve its objective of remaining competitive, it is strongly advised that Company A implement an activity-driven costing method.

5.2.2 Secondary Objectives

To successfully achieve the main objective of developing an activity-driven costing framework, secondary objectives were set to provide support to the study (refer section 1.3.2, page 10).

The first secondary objective of this study, the development of an appropriate research methodology to meet the main research objective, was presented in Chapter 2 (refer page 15). Fundamental assumptions behind the set of common beliefs and agreements (paradigm), what reality is (ontology), how one knows the reality (epistemology) and how to go about finding it (methodologies) were discussed. Fundamentals of research approaches, as well as qualitative, quantitative and mixed methods were reviewed and their roles in the selection of methods of data collection, analysis and interpretation discussed.

The second secondary objective of reviewing the existing literature on the fundamentals of cost allocation, TCM and ABC, and the emergence of TDABC, was presented in Chapter 3 (refer page 32).

The third secondary objective was to develop an activity-driven costing framework for Company A, the case study, to ensure improved product pricing and costing decisions (Chapter 4). A TDABC model was built and compared to the current TCS and variances and the impact thereof were analysed. To identify business support services activities and to allocate resource consumption, semi-structured face-to-face

interviews with relevant departmental managers and employees were conducted. Moreover, data from the ERP system and from departmental incidents registers was analysed and used to develop the framework.

The final secondary objective was to conclude the research by providing recommendations based on the findings of the empirical study and substantiated by the literature review. A summary of key research results as well as a conclusion and the extent to which the set objectives have been met, have been presented in this chapter.

5.3 Recommendations

The results of the comparison of the TCS and TDABC cost allocation models (refer Table 4.10, page 75) reveal that Company A is indeed in need of a system to accurately track and allocate costs. The research question formulated in Chapter 1 (refer page 9) was: would the development of an activity-driven costing framework lead to improved product pricing and costing decisions in Company A?

The comparison of the current TCS results against the newly developed TDABC model results (refer Table 4.10, page 75) proved that this was indeed the case. The newly developed TDABC framework provided a more accurate reallocation basis than that of the TCS currently in use.

As research by Sartorius *et al.* (2007:2) found, companies that continue to use TCS make erroneous cost management decisions if overhead costs are significant. Business support services costs account for over a quarter of Company A's total business costs, making them significant. Misallocation of business support services costs results in product and services costing and pricing being adversely affected, and this in turn affecting the marketability of these products and services.

The TDABC framework identified business support services activities, time allocated and the cost rate of each activity. The framework developed in Chapter 4 provides Company A with the capability to allocate costs as per activities consumed, produce transparency in the overhead costs area, deliver information for control purposes,

relate to the strategy of the company and improve all operating activities. This concurs with the research findings and a recommendation made by Rundora *et al.* (2013:488).

To achieve and maintain its competitiveness, Company A must keep track of its products and services costs and quality. As highlighted before, Özkan and Karaibrahimoğlu (2013:420) agree that cost and quality have been proven to be differentiating factors that give advantage over competitors.

Implementation of an activity-driven costing framework will result in Company A having the ability to determine actual product and service costs and business support services resources consumers, which provides useful information that would aid managements' operating decisions. It also aid in the accuracy of forecasting and budgeting of resources and ensure alignment to Company A's strategy.

The ease in terms of time and cost of adjusting recovery and time consumption rates means that Company A's financial analysts can periodically compare the set benchmarks to actuals, and adjust it accordingly to maintain the accuracy of the newly developed framework. The ease of adjustment is an added advantage of TDABC, over and above the benefit of accuracy of business support services cost reallocation. The resulting information will be the basis of reference for budget and forecast planning.

5.4 Limitations of the study

For the purposes of developing an activity-driven framework for Company A, it has been assumed that the financial information retrieved from the ERP system and used for the TDABC and TCS models is correct. It has been accepted that the Management Accountants of Company A have allocated business support office costs accurately to the correct general ledger account and department.

The framework developed for Company A cannot be replicated "as is" for another company, but adjustments will be required based on that company's departments and divisions.

Furthermore, for the purposes of this study, it has been assumed that the managers interviewed to determine their departmental activities and activities consumption rates

are knowledgeable about their departments. It is assumed that all information received is a true reflection of departmental activities and is unbiased.

The data used for the comparison of TDABC and TCS reallocation principles was based on one year's audited financial data. It is assumed that Company A is operating in a mature and stable industry with very few players, and that history is a close reflection of the future. It is expected that the status of the industry trading patterns that directly affect business support services utilisation will remain constant.

Lastly, the activity-driven framework developed for Company A is for the first phase of business support services cost allocation only. The first phase entails the reallocation of business support services costs from the departments to the two divisions of Company A. The framework cannot be generalised to the second phase, which is the reallocation of business support services costs from the divisions to the specific products and services, as activities and activity consumption rates of resources have not been determined.

5.5 Recommendations for further research

This study leaves the following topics for further investigation:

- The study thoroughly investigated TDABC as an alternative to the TCS model currently in use. This is due to its ease and cost effective design, yet offering so much more costing information for decision making. Other costing methods could be investigated.
- The framework could be developed even further to accurately reallocate business support services not only to the first phase of business support reallocation, but to be extended to reallocate these costs all the way to product and services levels also. A study to identify and analyse the specific consumption rates of resources by specific products and services at the second phase could be embarked on.

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