THE ROLE OF AUDIT FUNCTIONS IN ENTERPRISE RESOURCE PLANNING PROJECTS IN A SELECTED ORGANISATION IN SOUTH AFRICA

by

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Dissertation submitted in fulfilment of the requirements for the degree

Master of Technology: Business Information Systems

in the Faculty of Business and Management Sciences

at the **Cape Peninsula University of Technology**

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Cape Town
July 2018

DECLARATION

I, Chancelia Gray Angounou Nguema, declare that the content of this dissertation represents my own work, and that the dissertation has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

Signed **Date**

ABSTRACT

Enterprise resource planning (ERP) systems integrate business processes (BPs) into one database, facilitate data sharing, and provide real time information to authorised users, leading to an increase in efficiency and effectiveness. However, the implementation of an ERP system is not always a success as some systems turn out to be misaligned with the organisation's objectives. This misalignment can lead to inadequate controls within the system. ERP systems are designed to improve transactions within the BPs and provide a competitive advantage to organisations. However, this benefit can become a weakness if project implementation fails due to controls in the system not being aligned with the objectives. The aim of the study is to explore how audit functions can contribute to the implementation of ERP projects, and the objective is to propose a guideline that can improve the implementation processes of ERP projects. To address the aim and meet the objective of this study, two main questions are asked: 1) What are the factors to be considered when introducing audit functionality in the implementation of an ERP system? 2) How can audit functions assist organisations in ERP project implementation?

A subjectivist philosophical stance is followed and the epistemology lies within the interpretivist paradigm. An inductive research approach is followed and a case study is used as research strategy to conduct the research. The unit of analysis is the Operation Finance and Information Technology departments within the selected organisation, while selected employees (14) within the organisation form the unit of observation. A non-random, purposively selected sampling technique was used. Data were collected by means of semi-structured questionnaires through interviews. Data were analysed by summarising, categorising, and applying thematic analysis. The data analysis shows that audit functions (Operation Finance department, internal and external auditors) bring objectivity and assurance to the project in terms of financial reports, checks and balances, processes, structure, and internal controls. Getting people to cooperate however is a challenge for audit functionalities, and internal and external auditors can be a challenge during project implementation because their practical skills and computer-based knowledge to deal with huge volumes of data is extremely limited. It is highly recommended that the guideline presented in this research is followed, that engagement of audit functions with business processes is introduced and adopted by other role players involved in the project implementation process, and that audit functions should not be seen as a 'must have' but rather as support to improve the process. Ethical requirements as requested by CPUT are fulfilled.

Keywords: Enterprise resource planning (ERP), audit functions, implementation processes.

ACKNOWLEDGEMENTS

I wish to thank:

- YAWEH, the God Almighty for every single word written, for the strength, the inspiration and for the challenges He helped me overcome during this season
- My sisters, Julie ADA MVE and Carole WANGA EDOU for the financial support and for believing in me
- My dad, Hervais Aristide NGUEMA, for his emotional support; thank you for being harsh when it needed to be done and thank you for your love and believing in me
- My stepfather, Gilles Manganneau, for his emotional support. Your words have always been a great encouragement to me even when they were quite tough; thank you for being a great dad to me
- My mother, Beatrice Manganneau, thank you for being the best mommy ever
- My one, Parfait Ebogowno, for his emotional support. Your presence has been a blessing, encouragement and support when I wanted to give up
- My supervisor, Dr Andre de la Harpe, for his guidance, advice, and the time and energy spent on my work

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GLOSSARY

Abbreviations/acronyms	Full word/term
BP	Business Process
BPR	Business Process Re-engineering
ERP	Enterprise Resource Planning
ES	Enterprise System
MRP	Material Requirements Planning
SAP	Systemanalyse und Programmentwicklung (System, Analysis and Program Development)
SSAE	Statement on Standards for Attestation Engagements
SLA	Service Level Agreement
OFD	Operation Finance Department
IA	Internal Auditor
EA	External Auditor
SEC	Security and Exchange Commission
GAAP	General Accepted accounting Principles
AICPA	Association of International Certified Professional Accountants
BOM	Bill Of Material
PWC	Price Waterhouse Coopers
GL	General Ledger
TB	Trial Balance

DEFINITIONS OF KEY CONCEPTS

Concept	Definition
Enterprise resource planning	A “framework for organising, defining, and standardising the business processes necessary to effectively plan and control an organisation’s activities and use its internal knowledge to seek external advantage” (Nazemi, Tarokh & Djavanshir, 2012:999).
Audit functions	Audit functions refer to auditors, the people within a service organisation who are tasked and responsible to perform an audit (Beck, Francis & Gunn, 2018).
Implementation process	Represents the system adaptation and configuration phase. It is the business process re-engineering (BPR) and any activities subject to align the system with the organisational goals and objectives (Porter, Graham, Spring & Welch, 2014).

CHAPTER ONE: INTRODUCTION

1.1 Introduction

Enterprise systems are an important part of an organisation's strategies and operations to enable them to compete and operate efficiently and effectively (Abdinnour & Khawaja, 2015). Enterprise resource planning (ERP) systems enhance business processes (BPs), improve efficiency, and eliminate data duplication (Nazemi *et al*., 2012). These features make ERP systems the most popular systems. Furthermore, the ERP system is a powerful system that replaces the traditional systems because it integrates BPs and stores all the data in one main database (Maditinos, Chatzoudes & Tsairidis, 2012). ERP systems also provide users with real time information and facilitate data sharing within all the departments of the organisation. As a result, it increases service quality (Amid, Moalagh & Ravasan, 2012). The implementation of an ERP system is a long process that requires capital, resources and time from the organisation (Babaei, Gholami & Altafi, 2015). Thus, to minimise the risk of losing money and placing the organisation at risk, detailed project management needs to be performed from the inception of the project, which can be defined as the pre-implementation phase (Meissonier & Houzé, 2010), right through to the end of the project and the post-implementation phase. In fact, any implementation project starts with the planning and analysis phases, followed by the development and alignment of the system, and finally, the support services. These phases play a critical role in the success of project implementation as they affect system performance (Sarkis & Gunasekaran, 2003). Therefore, performing the wrong functions during these phases can lead to implementation failure in terms of the system aligning with the objectives of the organisation and to significant weakness and inadequate controls (Babaei *Byrnes, P.E., Al-Awadhi, A., Gullvist, B., Brown-Liburd*., 2015). Effective audit functions in business operations can minimise the risk of such failure and provide strong controls (Johl, Johl, Subramaniam & Cooper, 2013). Having audit functions as part of the pre-implementation, implementation, and post-implementation phases can improve risk management, signify stronger controls aligned with the objectives of the organisation, eliminate misalignment issues, and lead to successful implementation (Madani, 2009).

In this study, a large organisation with many sizeable projects was chosen as a case study (section 4.1). As unit of observation, 14 expert employees working within the audit and project environment were non-randomly selected (section 4.3; Table 4.1). The organisation is complex and operates within national and international borders, making the audit function role especially important. This complexity leads to many challenges

when implementing projects, especially ERP projects. The aim of the study is to explore how audit functions can contribute to the implementation of ERP projects, and the objective is to propose a guideline that can improve the implementation processes of ERP projects.

1.2 Background of the research

The implementation of ERP projects is complex with a high failure rate, which has led to research conducted on how to improve the ERP implementation process. It has been reported that failure due to misalignment can be attributed to the lack of audit functions within the project team (Nuijten, Keil, Van der Pijl & Commandeur, 2018). Because audit functions focus primarily on ensuring that the system aligns properly with the objectives of the organisation to mitigate high risks and to verify that the controls in place work as they should, the audit functions can play an important role in ERP project implementation to improve the implementation process. According to Beck *et al*. (2018), audit functions refer to the people within a service organisation who perform the work and responsibilities of an auditor. Their work consists of identifying the risks faced by the organisation, ensuring that the internal controls in place are appropriate and working properly to mitigate the risks. Audit functions also ensure that the organisation complies with policies and procedures (Sarens, 2009). These functions enable the project team to ensure that the system focuses on the high risks (Nuijten *et al*., 2018).

1.2.1 Problem statement

ERP systems are equipped with automated controls such as access simulation, sensitive access control, change control that can be helpful to an organisation when monitoring data or for transaction approvals (Madani, 2009). However, these controls are not always aligned with the organisation‘s objectives. The misalignment of the system with the objectives can lead to inadequate controls within the system (Babaei *et al*., 2015). ERP systems are designed to improve transactions within the BPs and offer a competitive advantage to organisations, but this benefit can become a weakness if the controls in the system are not aligned with the objectives of the organisation. Sarkis and Gunasekaran (2003:229) state that, “ERP systems could be a curse and drag the whole enterprise into spiralling inefficiency*”*. Mamoghli, Goepp and Botta-Genoulaz (2015) emphasise that misalignment between ERP system functions and the organisation’s objectives is a major cause of system failure. ERP systems with inadequate audit controls can lead to financial losses for the organisation (Kim, Richardson & Watson, 2018).

As companies invest in resources in the ERP project, system failure can negatively affect the state of the company. Hawari and Heeks (2010) indicate that ERP system failure can drive companies to bankruptcy. Despite the large body of knowledge in terms of managing the implementation of sizeable projects such as ERP systems, implementations are still failing. There is insufficient literature regarding the role of the audit function within projects that are focused on ERP implementation. Furthermore, automated controls when implementing ERP projects are not always aligned with the organisation‘s objectives, thereby leading to inadequate controls and the possible failure of the ERP system.

1.2.2 Aim and objectives of the research

The aim of this study is to explore how audit functions can contribute to the implementation of ERP projects. The objective is to propose a guideline that can improve the implementation process of an ERP project.

1.2.3 Research questions

To address the aim and meet the objective of this study, the following main questions and sub-questions were considered:

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

The following sub-research questions were considered to answer RQ1:

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

The objective of the question is to identify the different challenges organisations face when they consider introducing audit functions to ERP project implementation.

SRQ 1.2: What audit functions are needed when implementing an ERP system?

The objective of the question is to investigate how the organisation addresses audit functions in the ERP implementation process.

RQ2: How can audit functions assist organisations in ERP project implementation?

The following sub-research questions were considered to answer RQ2:

SRQ 2.1: How do organisations use the audit functions of the implemented ERP system?

The objective of the question is to determine how organisations execute audit functions during ERP system implementation.

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

The objective of the question is to examine if organisations are benefiting from the audit functions they use in the implementation of the ERP system.

1.3 Delineation of the research

The research is conducted in a selected company in Gauteng province in South Africa. The study focuses on the Operation Finance and Information Technology departments. No other departments other than these two were investigated in relation to the implementation of ERP systems.

1.4 Contribution

The research contributes towards the body of knowledge of the implementation of ERP projects by proposing a guideline with effective support and guidance to organisations implementing ERP systems in order to improve the implementation process and avoid implementation failure.

1.5 Overview of the research

Chapter One: Introduction

This chapter presents the importance and benefits of ERP systems. The high failure rate and misalignment issues encountered by organisations implementing an ERP system, is mentioned. This has led to the formulation of the problem statement. The key purpose of audit functions during project implementation is discussed as tool that can improve ERP system implementation. The main research questions and sub-research questions are stated, and the delineation, contribution, and ethical concerns are presented.

Chapter Two: Literature review

This chapter provides a detailed explanation of ERP systems, the implementation processes, and the audit functions. The chapter starts with ERP history, from planning inventory systems to cloud ERP systems. This is followed by defining ERP, ERP features, and vendors. Furthermore, the chapter discusses the ERP implementation process and implementation failure, and ends with the history of audit functions, the definition of audit functions, and audit functions applied in ERP projects to improve the implementation process.

Chapter Three: Research methodology

This chapter discusses the methodology used to conduct the research. The nature of the research, research philosophy, strategy, and design are indicated. The methodology serves as guideline for the researcher to conduct the research. A subjectivist philosophical stance is followed and the epistemology is founded in the interpretivist paradigm. An inductive research approach is followed and a case study is used as qualitative method. The unit of analysis is the Operation Finance and Information Technology departments within the selected organisation and the unit of observation is the employees (14) of the organisation. A non-random, purposively selected sampling technique is used and data are collected by means of semi-structured questionnaires through interviews.

Chapter Four: Analysis and findings

This chapter presents the case study, Company X, by providing details about the activities and the industry in which the company operates. The interview participants are presented in terms of their functions, job description, and years of experience in the company. Furthermore, the researcher explains how the data collected were analysed to derive findings. The findings are presented, summarised, and categorised in accordance with the research questions to develop sub-themes and themes that represent the main factors to be considered by the organisation that implements an ERP system. The themes are: i) audit of the project; ii) implementation process; iii) the role of Operation Finance; iv) consultations; v) skills and knowledge; and vi) finance cost.

Chapter Five: Discussion

This chapter discusses the themes developed in Chapter Four and answers the sub-research questions as well as the main research questions. The aim of this study is addressed with an explanation on how audit functions can contribute to ERP projects.

The objective of this study is met, and the proposed guideline to improve ERP projects is presented.

Chapter Six: Conclusion and recommendations

This chapter starts with a conclusion of the research and offers recommendations to organisations implementing an ERP system. Furthermore, the contribution of the research to the body of knowledge, the limitations of the research and ideas for future research are provided. The chapter ends with a self-reflection by the researcher.

1.6 Summary

This chapter introduced the topic of the research and outlined the background to the research by presenting the problem statement, purpose of the research, and main and sub-research questions. The aim of this study, namely to explore how audit functions can contribute to the implementation of ERP projects, and the objective of this study, namely to propose a guideline that can improve the implementation processes of ERP projects, were formulated. The delineation of the research was stated and the contribution, ethical considerations, and overview of the dissertation were discussed.

The next chapter presents what is contained in literature on the ERP concept. This implies an in-depth explanation of what ERP systems are all about and how audit functions can contribute to the implementation of ERP systems.

2. CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter, ERP systems, from the history to the implementation failure of these systems, are reviewed. The project implementation phases and the way in which implementation processes can be improved to minimise the risk of implementation failure, are also discussed. Key words and key concepts gained from the title, problem statement, research questions, aim, and objective of the study have been used to search library databases. Journal articles, books, conferences and quotations available on the CPUT databases, including Google scholar, were accessed to conduct this literature review.

In the next sections the following are discussed: i) ERP system history; ii) definition of an ERP system; iii) ERP vendors; iv) ERP project implementation; v) ERP project implementation failure; vi) auditing history; vii) audit functions in ERP projects; and viii) conclusion of the chapter.

2.2 ERP system history

ERP is seen as the last stage of the evolution of material requirements planning (MRP) (Gumaer, 1996; Yusuf & Little, 1998). Since the seventies when MRP has first been launched by J.I. Case (a manufacturer of construction and agricultural equipment) and IBM (an American multinational technology and consulting corporation), its evolution and development have progressed successfully from stage to stage over the years to meet the needs of industries (Gupta & Kohli, 2006).

2.2.1 From planning inventory systems to MRP I

Before the existence of MRP systems, enterprises had manual systems that made use of mathematical equations and techniques to keep track of inventory (Tijms & Groenevelt, 1984). Below are some characteristics of the manual system:

i) **Stock replenishment** is a procedure to avoid stock-outs (Schreibfeder, 2016).
ii) **The reorder point** is a calculation made to pinpoint the optimum time to place an order to circumvent shortages (Gor, 2009).
iii) To minimise the ordering cost and avoid ordering unnecessary stock, the **economic order quantity** is calculated (Adeyemi & Salami, 2010).

Despite leveraging all these techniques through using traditional and manual systems, industries were still not able to manage their inventory efficiently and effectively due to

the huge volume of inventory tracking (Jacobs & Weston, 2007). All these calculations performed by hand inevitably led to a high probability of human error. It was costly and time consuming for industries such as manufacturing, construction, aerospace and defence to manage high volumes of material, from the raw material phase right through to the finished product phase (Porras & Dekker, 2008; Nenes, Panagiotidou & Tagaras, 2010). Due to the losses caused by the manual systems, the need for better processes to manage production systems increased.

As a solution, MRP I was offered to industries in the seventies (1970-1980) in an attempt to address the aforementioned issues. Initially, the MRP I system was created to provide the manufacturing industries with a multi-stage manufacturing system and more advanced tools than the contemporary production-inventory control system known as the manual inventory system (Cooper & Zmud, 1990; Al-Mashari, 2002). On the one hand, the contemporary inventory system was not meeting the industries' production challenges anymore, resulting in high inventory costs, unsatisfied demands, and inventory shortages (Ebrahimpour & Fathi, 1985; Rabinowitz, Mehrez, Chu & Patuwo, 1995). On the other hand, the MRP I system was offering industries a system that integrated master scheduling and procurement, hence allowing them to control and monitor inventory from raw material to the final product stage (Drexl & Kimms, 2013).

2.2.2 From MRP I to postmodern ERP

In the seventies (1970-1980), MRP I was the perfect system to have. It provided organisations with an information system that promoted consistency and efficiency, leading to an increase in productivity. Today, ERP systems have evolved into postmodern ERP with more tools and features.

Figure 2.1 is the researcher's own graphical depiction of the evolution of the ERP system from MRP I to postmodern ERP, also called the cloud ERP system.

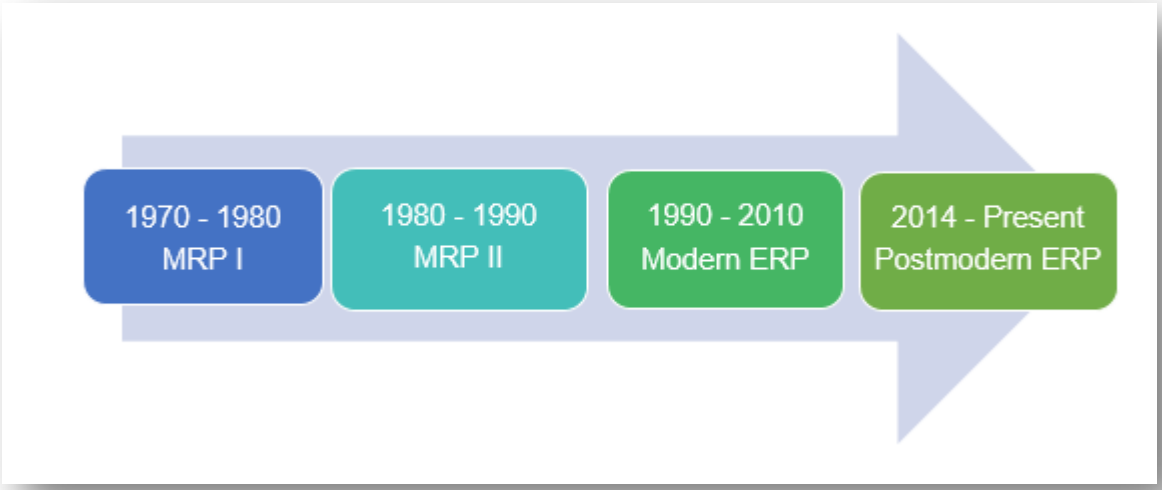

Figure 2.1: The evolution of ERP

2.2.2.1 MRP I

Back in the seventies (1970-1980), MRP I was the perfect fit for industries because the system was built with the bill-of-materials (BOM) processor and lead time, thereby providing industries with the quantity of material and time required to produce one specific item (Billington, McClain & Thomas, 1983). The MRP I processes provided an estimation of the material needed for production based on customer demand, thus reducing any risks of shortage, unsatisfied demand, and unnecessary material. These processes were in essence enabling industries to control their inventory effectively (Lunn & Neff, 1992). Hence, the features assisted in scheduling the production system for industries and worked perfectly for the manufacturing companies.

2.2.2.2 MRP II

MRP I however functioned in silos and there was no link or connection between the different business functions. VanDeMark (1964) and Vollman, Berry and Whybark (1997) mention the absence of a relationship between the marketing strategy and the production system in the MRP I system. Maskell (1993) states that MRP I did not have the technical capacity to incorporate various business functions. Because MRP I was not flexible enough to create a relationship between business processes and users of the system within organisations, the system evolved to MRP II in the eighties (1980-1990). The new system was not limited to the production department only; it also enabled the financial department to receive production cost information on time and meet customer demand

and satisfaction. MRP II had more features and flexibility, incorporating resource planning for the entire enterprise, with functionalities such as:

- **Master production scheduling,** planning the production per week, month, or year (Weinstein & Chung, 1999)
- **Rough-cut capacity planning**, a control technique verifying that sufficient capacity is available to meet the required capacity of the master production schedule (Zijm, 2000)
- **Capacity requirement planning**, an accounting method determining the financial resources needed to meet the production goals (Batista, 2008)
- **Production activity control,** which includes the activities related to the master production schedule, tracking the production, reporting on the materials and resources used and on the results of the production process, and enabling the purchasing and financial modules to work together as a closed-loop MRP

These added functions enhanced the efficiency of manufacturing enterprises. MRP II was able to operate in a multi-user network-enabling relationship between users and business functions within organisations. In the eighties (1980-1990) MRP II enhanced industry productivity and client satisfaction. The functions of MRP II enabled a wider integration.

2.2.2.3 Modern ERP

In the nineties (1990-2010) MRP II has evolved with more functionalities into a system that integrates more business functionalities, thereby enabling organisations to integrate all their business functions into one main system. The new system, called Enterprise System (ES) or ERP, is not restricted to manufacturing and financial processes; it also integrates sales and distribution, manufacturing, procurement and human resources (Xue, Liang, Boulton & Snyder, 2005) and stores all information from various business functions in one main database. The system offers features such as:

- **Flexibility,** allowing users to customise products and services (Akkermans, Bogerd, Yücesan & Wassenhove, 2003; Nwankpa, 2018)
- **Standardisation** of business processes and information (Nwankpa, 2018)
- **Transparency** in every transaction (Kloeden, 2007)
- **Integration** that replaces the silo transaction processing system (Trigo, Belfo & Estébanez, 2014)
- **A single information storage** for all the business functions, which facilitates **real time data sharing** among users (Al-Mashari & Zairi, 2000; Nwankpa, 2018)

- **Simultaneous updates** on any data added or changed in the main database, and making it available to all users (Srinivasan & Dey, 2014)

However, the complexity and the high cost to implement the modern ERP are challenging for some organisations such as small and medium-sized organisations for instance.

2.2.2.4 Postmodern ERP

Because of the cost and complexity of installing an ERP system on the premises of an organisation, ES has evolved again into cloud computing. Carroll, van der Merwe and Kotzé (2011) describe cloud computing as a system that provides a common pool of configurable IT resources such as processing, network, software, information and storage through a networked infrastructure (Stergiou, Psannis, Kim & Gupta, 2018).

The postmodern ERP is a solution less complex and less costly to implement, and smaller companies are able to experiment more easily with cloud solutions (Mahapatra & Krishnan, 2017). However, very large companies that have already made significant investments in their existing on-site ERP system may not be so keen to change to the postmodern ERP system due to the cost implied by the change. Postmodern ERP systems can be serviced in three different ways, namely Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) (Tiwari & Joshi, 2018).

SaaS provides access to software by means of any computing devices and does not require the software to be installed on the client side. The software is accessible through the Internet. The users have no control over the software itself, as control is retained by the cloud computing service provider (Abedi *et al*., 2011; Arockiam, Monikandan & Parthasarathy, 2011; Mohlameane & Ruxwana, 2013; Ubiry, 2014; Tiwari & Joshi, 2018).

PaaS provides a platform where software and applications can be deployed by the users. Users can retain control over their deployed applications and hosting environment configurations but do not control the underlying cloud infrastructure, including network, servers, operating systems or storage (Abedi *et al*., 2011; Arockiam *et al*., 2011; Mohlameane & Ruxwana, 2013; Ubiry, 2014; Tiwari & Joshi, 2018).

IaaS provides computer infrastructure (server, network equipment, data storage, software) that is billed on a pay-per-usage basis. The users retain control over the storage

but have limited control over the networking components (Abedi, Fathi & Rawai, 2011; Mohlameane & Ruxwana, 2013; Ubiry, 2014; Tiwari & Joshi, 2018).

Figure 2.2 is the researcher's own graphical view of postmodern ERP services.

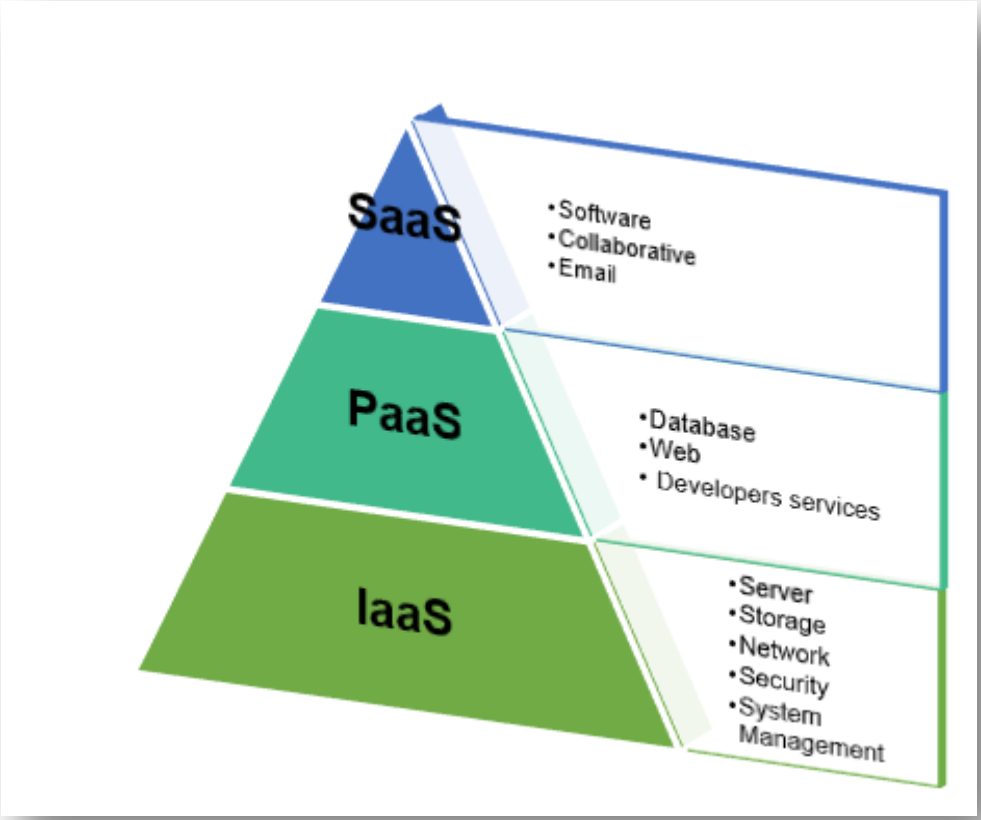

Figure 2.2: Cloud computing services

2.3 Definitions of ERP systems

The name ERP was originally created in 1990 by the Garner Group to define the next level of MRP II systems (Gumaer, 1996; Yusuf & Little, 1998). The need for the extension of MRP II was led by the necessity of industries to save time and reduce costs to gain a competitive advantage. The ERP system is the best competitive advantage tool that industries can leverage to achieve their targets within their strong competitive environment. This system drastically improves the efficiency and effectiveness of tasks and processes.

According to Gibson and Mann (1997), Robinson and Dilts (1999), Krumbholz, Galliers, Coulianos, Maiden (2000), Rebstock and Selig (2000) as well as Somers, Nelson and

Ragowsky (2000), the ERP system integrates all business processes and functions into one relational database, facilitating organisations to increase efficiency through the access of information in a real time environment. Scheer and Habermann (2000) point out that the ERP system can be seen as an instrument able to improve business processes such as marketing and sales, manufacturing and procurement, human resources, and accounting and finance.

Furthermore, Shehab, Sharp, Supramaniam and Spedding (2004) argue that the ERP system is a business management system integrating a software solution that improves business process performance and effectiveness when properly implemented. Nazemi *et al*. (2012:999) define an ERP system as "a software package made of multiple modules such as human resources, sales and marketing, accounting and finance, providing cross-organisation integration of information that is stored in one main database and driven by the business processes to improve the industry performance". Monk and Wagner (2013) pursue that ERP systems are primarily software solutions that are used by companies to incorporate and synchronise data in every process of the industry. The system allows industries to cope with company-wide business processes through common storage of information and management reporting tools. Abdullah (2017) and Rouhani (2018) agree that ERP systems are applications that integrate business processes used by industries to perform functions such as planning, production management, sales management, finance management, and human resource management. These definitions are showing the different aspects of the ERP system. However, for the purpose of this research, ERP systems are defined as software solutions that can enhance industries' performance through the integration of business processes when successfully implemented.

2.4 ERP vendors

According to Surjit, Rathinamoorthy and Vardhini (2016) as well as Kanchana and Ranjini (2018), there are many vendors, including SAP, Oracle, Microsoft dynamics, Epicor, Infor, CDC Software, Comcash ERP, CresCloud, Edible Software, Evosys, Godesys, IFS, Lawson, NetSuite, Odoo, PeopleSoft, Plex Systems, Produce Pro, QAD, Sage, SYSPRO, Tyler Technologies, and Unit4. Vendors' expertise varies and differs. For instance, some vendors such as SAP, Lawson, Microsoft, Oracle, Pronto Software, and Sage have functional capability in process manufacturing software, discrete manufacturing software, distribution software and retail software, where other vendors such as CDC and Syspro have expertise in process manufacturing software, discrete manufacturing software, and distribution software (Surjit *et al*., 2016). Vendors sell to

different sectors. Previous literature has shown that Oracle and SAP are the major vendors (Jacobs & Weston, 2007). They have been selling ERP solutions to a worldwide customer base for many years. In fact, after the first introduction of MRP in the seventies through the joint effort of IBM and J.I. Case, five engineers in Germany started a software company called Systemanalyse und Programmentwicklung (SAP). They wanted to bring into the market a "software line that would become the backbone of all inter-business related communication solutions" (Vanover & Shorter, 2006). Larry Ellison started Oracle Corporation, while Jack Thompson, Dan Gregory and Ed McVaney created JD Edwards. In 2003, Oracle and JD Edwards decided to work together and in 2005, they merged with PeopleSoft (Vanover & Shorter, 2006). Oracle is known as the first supplier in software for human resource management, supply chain management, and customer relationship management (Oracle Corporation, 2006). However, over the past years, Microsoft also became one of the major vendors of ERP products. In fact, in sectors such as the manufacturing and distribution industry, the services industry and the retail industry, SAP, Oracle, and Microsoft have the largest part of the market share (Surjit *et al*., 2016).

The vendors offer systems in different sizes. As the standard ERP product is a very large and complex system to implement, ERP vendors propose better manageable ERP modules for small and mid-sized companies. For instance, SAP offers different packages to target different customer categories, including the following:

- **"SAP Business One"** for small businesses with less than 500 employees (Venkatraman & Fahd, 2016)
- **"SAP Business All-in-one"** for small and mid-sized entities with more than 1000 employees

These packages offer the same benefits as the standard ERP product but they are quicker and easier to implement. **The standard ERP product** is more expensive, more complex, and the implementation takes longer. It is more appropriate for industries dealing with millions of transactions.

Figure 2.3 is the researcher's own illustration of the complexity of a standard ERP system. The product comprises different modules for each business function, called functional ERP modules.

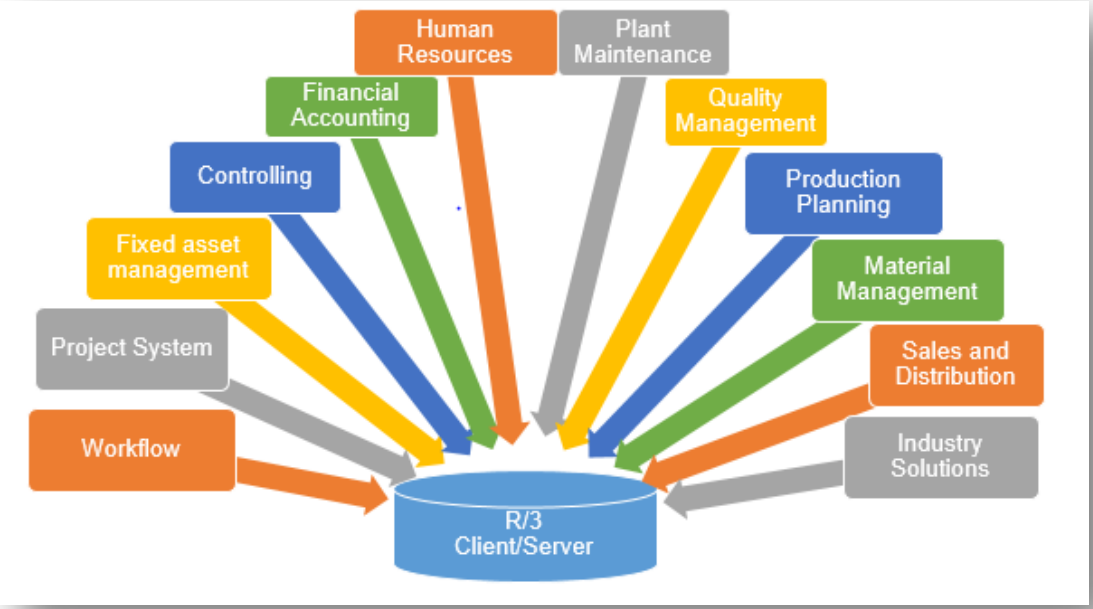

Figure 2.3: SAP R/3 modules

According to SolutionDots (2018), Microsoft Dynamics ERP also offers packages that can assist small and medium-sized enterprises with financing, manufacturing, supply chain, analytics and electronic commerce. Microsoft Dynamics ERP comprises five primary products: Microsoft Dynamics AX, Microsoft Dynamics GP, Microsoft Dynamics NAV, Microsoft Dynamics SL, and Microsoft Dynamics C5, all briefly explained below:

- **Microsoft Dynamics AX:** Helps organisations do business across locations and countries by standardising processes and helping to simplify compliance
- **Microsoft Dynamics GP:** Also called Great Plains Software, helps companies adapt to new opportunities and growth by managing changing markets, enabling unique business requirements, and connecting business processes across the organisation
- **Microsoft Dynamics NAV:** Designed to help organisations streamline specialised and industry-specific business processes
- **Microsoft Dynamics SL:** Helps project-driven organisations obtain reports and business analyses, and automates projects across company divisions and locations
- **Microsoft Dynamics C5:** Limited to financial management and inventory management, it is designed to assist small and medium-sized businesses in term of finance, supply chain, project management, and analytics.

2.5 ERP project implementation

Previous research has shown that the implementation phases can be extended to six stages, namely the adoption decision, procurement, development, use and maintenance, progress, and retirement phases (Esteves & Pastor, 1999). Capaldo and Rippa (2009) however argue that ERP project implementation consists of three main phases, namely pre-implementation, implementation, and post-implementation. The six stages are now grouped into three main phases. Figure 2.4 is the researcher's own graphical representation of the different phases in the implementation of an ERP system where the six phases are grouped into three main phases.

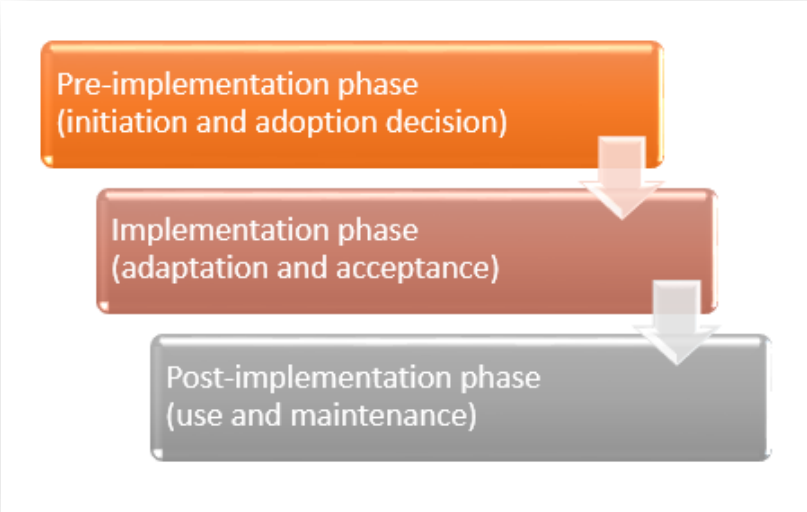

Figure 2.4: The implementation phases of an ERP

2.5.1 Pre-implementation phase

The pre-implementation phase is the first and most important step as comprehensive planning and analysis of the project is performed here (Marakas & Hornik, 1996; Joshi & Lauer, 1998; Mahmud, Ramayah, & Kurnia, 2017). According to Hasibuan and Dantes (2012:9), the following activities take place during the pre-implementation phase:

- Top management plans the implementation of the ERP system
- Examination of the system requirements according to industry and feasibility
- Ensure a possible alignment with the company's objectives
- Assessment of the benefits and drawbacks of the adoption of an ERP
- Perform a cost-benefit analysis of the acquisition, which is mainly composed of estimations of the cost of the modules or technology chosen, human resources

costs (project team and IT consultants), training and maintenance services cost, others related costs, and the return on investment

Implementation time is also evaluated by management during the pre-implementation phase, which is where the planning is done (Peslak, Subramanian & Clayton, 2008). McAfee (2007) suggests that management needs to focus on the pre-implementation phase in order to deal with potential conflicts that can lead to project failure.

2.5.2 Implementation phase

The implementation consists of the system adaptation and configuration phase. It mainly consists of business process re-engineering (BPR) and any activities subject to align the system with the organisation goals and objectives. ERP systems are not compatible with others systems; the implementation of an ERP system imposes a change in the business processes. This phase is both decisive and extremely consuming in terms of resources (Haddara & Zach, 2011).

2.5.3 Post-implementation phase

The post-implementation phase represents the adjustment or correction phase. During this phase, errors are corrected and configurations are made (Abdinnour & Khawaja, 2015). In other words, the post-implementation phase corresponds to the "Go Live & support" stage, according to Mamoghli *et al*. (2015). The authors also indicate that the post-implementation phase commences when the system is activated, and it ends when 'normal operations' have been performed (Kvillert & Reijonen, 2018).

The ERP implementation phases are meant to provide a framework that guides and assists the organisation implementing the ERP system to succeed. Despite these phases, some ERP projects fail because they are not aligned with the company's objectives.

2.6 ERP project implementation failure

ERP systems are known as wide ranging and complex systems able to manage an entity's business processes (sales and distribution operation, manufacturing process, finance and accounting methodology, human resources function) and integrate all data into one database that makes the information available in real time and to all authorised users. However, the implementation process of the ERP system is not always successful and can lead to great loss and even the bankruptcy of an entity (Cotteleer, 2002; Omar, Mohamed & Assia, 2017). ERP implementation project failure occurs at three different

levels: cost, time, and alignment of the system (Hong & Kim, 2001; Peterson, Gelman & Cooke, 2001; Zhang, Lee, Huang, Zhang & Huang, 2005; Sammon & Adam, 2010). The failure at cost level happens when the implementation cost exceeds the budgeted cost and the project is shut down before the end. Indeed, some projects have been shut down because of the unexpected high costs to complete the project, for example, the case of Waste Management Inc., which exceeded their budget and had to cancel the implementation project before completion (Vidyaranya & Brady, 2005).

At the time level, failure happens when the implementation process runs longer than the planned time or when it is delayed. Timely implementation is one of the criteria enabling companies to measure their project success (Müller & Jugdev, 2012). Time is also a rating tool to determine the pricing of contracts (Cassidy, 2006). Therefore, when the timing objectives are not met the project costs the company more, and the project can be shut down if the entity does not have the resources to cover the exceeding costs.

Implementation failure due to lack of alignment refers to an end results implementation that does not match with the way the organization operates in terms of controls and other operations. When the implemented system does not align with the company's objectives or processes in terms of standards, techniques, and internal controls, the result is failure (Xue *et al*., 2005; Wolters, Eseryel & Eseryel, 2018). Some ERP systems do not 'fit', thereby resulting in not benefitting companies because the outcome is not aligned with the company's objectives and the way business is conducted (Amid *et al*., 2012; Wolters, Eseryel & Eseryel, 2018). Sumner (2009) states that failure occurs because the 'fit' between the standard functionalities of the ERP system and the company's real needs are not properly managed. Mamoghli *et al*. (2015) further this thinking by stating that some projects do not fulfil the organisation's needs and lead to the misalignment of the system with the organisation's objectives**.** The authors link these failures to the lack of proper planning. Inadequate planning due to the lack of audit functions is therefore a focus point of this research.

2.7 Auditing history

Auditing, also called internal audit, refers to an examination of different accounts or processes, followed by a physical control of inventory in some cases, aiming to ensure that all the departments in an organisation function properly and comply with the rules and regulations. The Institute of Internal Auditors (2018) defines internal audit as "an independent, objective assurance and consulting activity designed to add value and

improve an organisation's operations. It helps an organisation accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes". Auditing an organisation's account or processes can be done in two ways:

i) **Internally:** The employees or heads of a particular department perform the checks and controls to ensure that the recording processes are working properly. The outcome of the audit provides assurance to the management in terms of processes and finances. It tells management whether the business processes are working properly or not.
ii) **Externally:** An external firm or independent consultant/auditor performs the checks and controls to confirm the accuracy of the financial statements. The outcome of the audit determines the accuracy and provides assurance in terms of financial statements to the Chief Executive Officer, Board of Directors, shareholders, and external parties.

The internal audit, being the independent activity that provides assurance, has not always been the same. In fact, auditing evolved significantly over the past years (Byrnes, Al-Awadhi, Gullvist, Brown-Liburd, Teeter, Warren Jr. & Vasarhelyi, 2018).

2.7.1 From non-independent to independent auditing

Auditing already existed before 1840; it could even be found in the ancient Roman civilisation in the form of 'ancient checking activities'. Back in those days, auditors would listen to the oral reports presented by the responsible official and confirm the accuracy of the report (Byrnes *et al*., 2018).

The first financial audit statement was provided in 1844 when the British Parliament approved the Stock Companies Act that required directors to report to the shareholders by means of an audit report. However, the Stock Companies Act did not require auditors to be independent of the organisation. Audit practices were therefore not conducted independently and auditors used information provided by management personnel to perform tests and controls (Byrnes, Al-Awadhi, Gullvist, Brown-Liburd *et al*., 2018). Only in the 1900s did a new Companies Act require auditors to be independent from the organisation, and only after the stock market crash of 1929 did auditing become a compulsory process in the United States to address fraud detection and financial accountability and provide investors and shareholders with reliable financial reports. In 1934, the Securities and Exchange Act established the Securities and Exchange

Commission (SEC) to declare accounting and auditing standards. To support the SEC with reporting standards compliance, public accounting firms were required to provide certain assurances regarding their information to ensure that reporting standards comply with generally accepted accounting principles (GAAP) (Byrnes *et al*., 2018). As a result, the American Institute of Certified Public Accountants (AICPA) delivered the first Statement on Auditing Procedure (SAP) in October 1939. SAP required auditors to not only examine transactions but also inspect inventories and confirm receivables (Byrnes *et al*., 2018). Thus, auditors were given the authority to audit the business entity itself rather than being dependent on management information (Byrnes *et al.*, 2018).

2.7.2 From traditional to future auditing

Traditional auditing on the one hand refers to old-fashioned manual procedures, not taking into account any automated equipment. In such audits, the auditors use the physical input and output of the system, but they do not audit how the information is processed by the actual system. The traditional audit comprises four phases, namely the planning, sampling, testing, and reporting of audit transactions and accounts of the organisation. There is an audit engagement, a risk assessment, and an audit plan presenting the scope and objectives of the audit. Following this, auditors collect and analyse audit evidence. At the end of the engagement, auditors present a formal report wherein they express their opinion on the internal control and accuracy of the financial statements. However, because of limited technology, the traditional audit often fails to provide continuous assurance.

On the other hand, a computerised audit refers to an ‘audit using the computer’, which is a direct evaluation of computer software, hardware, and processes. ‘Auditing using the computer’ further involves the actual use of computer systems in testing both controls and transactions. Such an audit requires the use of audit software that facilitates data extraction, categorisation, and scrutiny procedures (Gonzalez & Hoffman, 2018). The use of audit software requires training, offers no file size limitations and provides comprehensive audit records that can be used as work paper documentation (Gonzalez & Hoffman, 2018). Furthermore, the audit programs can be configured to address specific tasks such as balancing ledgers, selecting statistical samples, generating validations, and detecting mistrustful transactions. Moreover, such tools are capable of testing 100 percent of the records included in a file, which is a remarkable improvement over the sampling techniques historically found in the traditional manual audit (Gonzalez & Hoffman, 2018). Given all of this, ‘auditing using the computer’ enables the provision of

a much higher level of assurance when compared to traditional auditing called 'auditing around the computer'.

2.8 Audit functions in ERP projects

ERP implementation fails due to an inadequate planning phase. Of several reasons underlying these planning failures, the lack of audit functions has been chosen as a focus for this research. Furthermore, one of the critical factors for the success of an ERP project implementation is the project team (Moohebat, Asemi & Jazi, 2010; Ram, Corkindale & Wu, 2013). For project implementation to be a success, the right people with the right knowledge and competence are required in the project team to carry the project through from planning to post-implementation. Consequently, if the wrong competencies and skills are applied in the planning phase, project implementation can be a failure. Therefore, particular care is needed when composing the ERP project team for implementation. Bancroft (1996), Parr, Shanks and Darke (1999) as well as Amalnik and Ravasan (2018) mention that a complete and effective project team for ERP implementation consists of business and IT people who have a thorough understanding of the business objectives and operational activities. Some of these activities involve the audit functions together with top management to solve the misalignment problem in ERP projects (Saadé, Nijher & Sharma, 2017).

Beck *et al*. (2018) mention that audit functions are the people within a service organisation who perform the work and responsibilities of an auditor. Their work consists of understanding the business operations of an organisation to identify the risks faced by the organisation and to ensure that the controls in place to mitigate the risks are appropriate and working. They also ensure that the organisation complies with policies and procedures (Sarens, 2009). According to the Institute of Internal Auditors (IIA, 2009), auditors have the competence and are skilled in a detailed understanding of the business objectives. Therefore, their expertise in risk management enables them to assist management in decision making processes and mitigating high risks in ERP project implementation. In fact, auditors are known as experts in terms of identifying the higher risks and recommending appropriate controls (Elbardan & Ali, 2011). Page 1 of the Audit Report of the City of San Diego (OCA, 2011) indicates that in ERP systems, the project managers mostly focus on the new system and new structures, design and procedures as well as on changes in tasks and jobs and how to facilitate the implementation and transitioning from the old to the new system. This implies that less attention is paid to the high risks a company could face with the new system.

Auditors also perform project audits in ERP projects, which consist of verifying that project realisation conforms to the rules, principles, and regulations in place. The main goal is to examine and assess the project processes and determine the extent to which it meets the criteria in terms of success. The system is scrutinised as it is being implemented, which ensures that the internal controls applied to mitigate the high risks are adequate to the organisational processes and areas where improvements need to be made for the project aim and objectives to be attained are identified (Kim, Teo, Bhattacherjee & Nam, 2015). This scrutiny can be executed during different stages of the project: i) during realisation; ii) at the end of one stage of the project; and iii) when the project is completed (Kim *et al*., 2015).

The following activities are performed during a project audit:

- Inspecting the correctness of the procedure in place, which applies to the completion of each project phase
- Obtaining information on the tasks completed or not completed for each phase
- Assessing the quality and relevance of the project documentation
- Evaluating the competence and performance of the project management
- Suggesting improvement tools
- Verifying the fulfilment of the project goal:
    a) Overall examination that the goal of the project is met
    b) Evaluate whether or not the project is successful

Therefore, running a project audit within the ERP implementation phase can ensure that high risks are dealt with in the implementation processes (Singh, Singh & Singh, 2013; Elbardan & Kholeif, 2017).

Figure 2.5 is the researcher's own graphical example of the outcome of a project audit in ERP projects.

Figure 2.5: Project audit aim

2.8.1 Project audit benefits

Project auditing benefits project implementation as follows:

- Lessons learned during the project that can be applied to both the organisation and its vendors (Kim *Byrnes, P.E., Al-Awadhi, A., Gullvist, B., Brown-Liburd et al*., 2015)
- Development of strategies, which if implemented within the organisation will increase the likelihood of future projects and change initiatives being managed successfully (Kim *et al.,* 2015)
- Development of project success criteria which might include meeting on-time, on-budget customer and other stakeholder requirements, and transitioning to the next phase successfully executed (Kim *et al*., 2015)
- Recognition of risk management so that risk assessment and the development of associated contingency plans become commonplace within the organisation (Kim *et a*l., 2015)
- Development of change management success criteria which might include how staff are involved, how customers are impacted, how the organisation is impacted, and transition to next level of change to be initiated (Kim *et al*., 2015)

- Development of criteria that will continue the improvement of relationships between the organisation and its vendors, suppliers and contractors regarding the management of projects (Kim *et al.,* 2015)
- Identification of the lessons learned on the project that can be applied to future projects within the organisation (Kim *et al*., 2015)

From the above, making auditors part of the implementation of an ERP project can be a way to resolve the misalignment problem and avoid implementation failure, as the primary focus is on the higher risks, controls, and entity objectives.

2.9 Summary

In this chapter, the history and evolution of the ERP system were discussed, from the MRP system to the ES and ERP. The features, packages, and modules of ERP were also mentioned. Furthermore, the implementation phases of an ERP system and the role of each phase were explored, and ERP vendors were identified in a brief history. The chapter concluded with discussing the role audit functions can play in ERP projects, and the project audit tool that monitors and ensures successful project implementation with adequate internal controls aligned to the organisation's objectives.

3. CHAPTER THREE: RESEARCH DESIGN

3.1 Introduction

In Chapter Two, the literature on ERP systems, implementation processes, and audit functions were discussed. In this chapter, the research design adequate to address the aim and meet the objective of the study is elaborated on. The nature of research is discussed, followed by the research philosophy and approach, the research strategy, data collection, data analysis and ethics. The chapter concludes with a summary of the research design.

3.2 Nature of research

The nature of research refers to the way the investigation into a specific topic is performed. According to Collis and Hussey (2009:5), there are three main types of research: “exploratory research, descriptive research and analytical research”.

3.2.1 Exploratory research

Exploratory research is conducted for initial research on a specific phenomenon that has never been explored and where there is very little or no existing knowledge. In other words, this type of research aims to generate new knowledge about the phenomenon being investigated and answers the questions, “*what?”* and “*how?”*

3.2.2 Descriptive research

Descriptive research describes the phenomenon being studied and adds new information and characteristics to the specific phenomenon. Information is mainly gathered through observation. This type of research provides a clear and accurate report of the phenomena being studied (Van Wyk, 2012).

3.2.3 Analytical research

Analytical research goes beyond descriptive and exploratory research. It does not describe or explore a specific phenomenon, but is built on both exploratory and descriptive research by providing explanations of these two variables. It requires critical thinking skills from the researcher to evaluate and discuss information and facts through analysis procedures in order to create knowledge that convinces the reader.

Stemming from the above, this research is deemed explorative. As shown in section 1.2.1, further research needs to be conducted on the misalignment between ERP system functions and the organisation’s goals and objectives in order to prevent system failure.

The need to understand how inadequate audit controls can lead to financial losses and bankruptcy for the organisation when implementing an ERP system also requires more research. For this reason, exploratory research is conducted asking *"what"* and *"how"* questions (section 1.2.3).

3.3 Research philosophy

Research philosophy provides the researcher with guidance on how to treat a specific phenomenon to gain understanding, knowledge, and explanations from it. The research paradigm is mainly characterised through ontology and epistemology to give the researcher a general view on how to see knowledge (Guba & Lincoln, 1994; Saunders, Lewis & Thornhill, 2016).

3.3.1 Ontology

The ontology of research focuses on the researcher's belief of what reality is. It reveals the perception of truth and what the truth is according to the researcher (Björn & Carsten, 2006). The main ontology approaches are objectivism or subjectivism.

3.3.1.1 Objectivism

With this approach, impartial measurement is performed. The researcher does not influence the data gathered but provides impersonal measurements of reality. Quantitative methods are therefore more likely to be used with this approach in order to find knowledge (Björn & Carsten, 2006).

3.3.1.2 Subjectivism

In this approach, the researcher influences the data gathered and is therefore more likely to use qualitative methods to obtain multiple perceptions from people in order to find knowledge (Björn & Carsten, 2006).

For the purpose of this research, the ontology is subjectivist because the knowledge is gathered from the researcher's interpretations of the collected data. The perceptions of different people on what the auditors can do in ERP project implementation are collected and studied by the researcher to determine how auditors can affect the implementation. As this research is based on personal feedback and interpretation, the objectivism approach is deemed inappropriate.

3.3.2 Epistemology

The epistemology of the research study focuses on how the knowledge will be created and the type of relationship the researcher has with the research. It answers questions such as, "*how do you know something?*" and "*is the researcher going to be part of the knowledge or not?*" The epistemology of research is mainly categorised as positivism and interpretivism (Guba & Lincoln, 1994; Krauss, 2005).

3.3.2.1 Positivism

The positivist approach believes there is a single reality or truth that can be measured or found objectively trough experimentation (Virtanen, 2014). As this research is not based on a single truth or experimentation, the positivist approach is deemed inappropriate.

3.3.2.2 Interpretivism or constructivism

Interpretivism believes there is not one single reality or truth, but that reality can be created through experience and interaction. It believes in multiple versions of reality (Björn & Carsten, 2006).

From this, the epistemology is interpretivist for the purpose of this research. This interpretivist stance has been adopted because the researcher gathered data from many perceptive and experienced people on how audit functions can contribute to ERP project implementation.

3.4 Research approach

In terms of the research approach, two main ways of reasoning are identified, namely inductive reasoning and deductive reasoning.

3.4.1 Inductive reasoning

Inductive reasoning, which refers to the bottom-up research approach, starts with specific observations or interrogations to draw a theory from the outcomes. It takes place where a theory, a guideline or framework is developed from specific information to the general understanding of the phenomenon (Woo, O'Boyle & Spector, 2017).

3.4.2 Deductive reasoning

Also called the top-down approach, deductive reasoning begins with a general statement and works down to draw a conclusion from the general information. In other words, the focus of the research is sifted from a general understanding of the phenomenon to get to the specific matter of the phenomenon at hand (Collis & Hussey, 2009).

The research approach of this study is inductive as the research contributes to the body of knowledge by proposing a guideline that can improve ERP project implementation, developed from specific information gathered from different experienced people in a selected organisation based in Gauteng province, South Africa.

3.5 Research strategy

3.5.1 Qualitative research

Qualitative research explores people's perceptions of an experiment or a specific case study. It mainly answers the questions "*what?*" or "*how?*" with the aim to report in detail what has been studied (MacDonald & Headlam, 2009). It is based on narrative information, leading the researcher to be subjective to the research matter.

3.5.2 Quantitative research

Quantitative research examines the relationship between the different variables affecting the research. It is mainly based on numbers and measurements to draw objective conclusions. This type of research answers the questions, "*how much?*" or "*how often?*" with the aim to provide numerical explanations of what is being studied (Macdonald & Headlam, 2009).

This research is deemed qualitative as the research questions asked are based on *"what?"* and *"how?"* questions (section 1.2.3).

Table 3.1 shows the differences between qualitative and quantitative research in terms of aim, purpose, tools used to collect the data, structured/unstructured data collection, output, sample, objective/subjective research, the role of the researcher, and the type of analysis.

Table 3.1: Qualitative and quantitative research
(Source: Macdonald & Headlam, 2009:9)

	Quantitative	Qualitative
Aim	The aim is to count things in an attempt to explain what is observed	The aim is a complete, detailed description of what is observed
Purpose	Generalisability, prediction, causal explanations	Contextualisation, interpretation, understanding perspectives
Tools	Researcher uses tools, such as surveys, to collect numerical data.	Researcher is the data gathering instrument.
Data collection	Structured	Unstructured
Output	Data is in the form of numbers and statistics.	Data is in the form of words, pictures or objects.
Sample	Usually a large number of cases. Randomly selected. Respondents representing the population of interest.	Usually a small number of nonrepresentative cases. Respondents selected on their experience.
Objective/ Subjective	Objective – seeks precise measurement & analysis	Subjective-individuals' interpretation of events is important
Researcher role	Researcher tends to remain objectively separated from the subject matter.	Researcher tends to become subjectively immersed in the subject matter.
Analysis	Statistical	Interpretive

3.6 Research design

3.6.1 The case study

The strategy for this research is a case study. According to Yin (2003) and Zainal (2007), this type of research involves a program or event (case) being studied in depth for a defined period of time to provide an explanation and knowledge of a particular phenomenon. Company X is the case study of this research. It is a South African company based in Gauteng province, delivering its production across Southern Africa, Eastern Africa, the United Kingdom, Europe, the Middle East, and China. More details on the company are provided in section 4.2.

This research explores how audit functions can contribute to the ERP project of Company X in order to provide a guideline that will improve the ERP implementation process.

Unit of analysis

William and Trochim (2006) mention that the unit of analysis represents the main entity to be studied in a project. The unit of analysis for this research is the Operation Finance and the Information Technology departments.

Unit of observation

Fisher (2007) says that the unit of observation refers to *where* the data are collected from. The unit of observation is the employees working in the specific departments.

Sampling

The case was non-randomly selected based on convenience, as the company expressed its willingness to participate in the research. The departments directly involved in the ERP implementation process were selected in a non-random, purposive manner. The employees (14) were also non-randomly and purposively selected (Table 4.1).

3.6.2 Data collection

Data collection refers to the gathering of information. Section 3.6.2.1 answers the following question: *"How is the data collected, and where is it collected from?"*

3.6.2.1 Interviews

Interviews, questionnaires, and observations are methods used by researchers to gather primary and secondary information. Interviews were the method chosen for this specific study. Interviews assist researchers in collecting information from people regarding their own practices, beliefs, or opinions. They can also be used to gather background information and information on past or present behaviours or experiences (Harrell & Bradley, 2009). Interviews fall primarily within the interpretivist research paradigm. According to Cooper and Schindler (2006:204, 208, 210-211), there are three types of interviews (unstructured, semi-structured and structured), but for this study, semi-structured interviews were used because it enables participants to go beyond the interview questions into their answers. Semi-structured interview questions start with a few specific questions and/or topics, followed by the individual's natural 'flow of thought' (Longhurst, 2003; Galletta, 2012; Teijlingen, 2014). An interview guide (Appendix A) was used to guide the researcher through the interviews. The Interview questions were developed to inform the main research questions as well as the sub-questions. The

interview guide was validated by the supervisor, two academic reviewers, and the Ethics Committee of the Faculty of Business and Management Sciences at CPUT. The interview guide was also piloted with two participants. All interviews were recorded after obtaining written and verbal consent from the participants. Data were collected from 14 employees working in different departments (Corporate Finance, Operation Finance, Information Technology, and Human Resources) with different levels of responsibilities, including managers, clerks, and business users. Data were recorded by the researcher with the consent of the participants. Non-random, purposive, convenient sampling was used to select the participants (Table 4.1).

3.6.3 Data analysis

Data analysis refers to the treatment of information. This section explains how the data collected were treated to develop knowledge. The questionnaire for the interviews comprises two main research questions (RQs), four sub-research questions (SRQs), and twelve interview questions (IQs). The interview questions are designed to answer the sub-research questions. The sub-research questions answer the main research questions, and the main research questions address the problem statement and aim, and contribute to meeting the objective of the study. The interviews conducted with all participants were recorded, transcribed, and then returned to the participants for verification of correctness and approval (Appendix E). From the transcribed interviews, the researcher summarised the answers of each IQ to determine the findings (Figure 4.2). After drawing all the findings, the researcher grouped the findings per SRQ (Tables 4.2, 4.3, 4.4 and 4.5). The researcher then categorised the findings per RQ to determine the main idea of each finding. The thematic analysis which pinpoints, examine and record patterns or themes was used to develop sub-themes from each main idea. From the sub-themes, themes were formulated (Tables 4.6 and 4.7). This process enabled the researcher to examine the data closely and identify the main themes.

In Chapter Five, the researcher discusses each theme, compares the themes with the literature, and provides answers to the main questions (section 5.3), thereby addressing the aim of the study and meeting the objective.

3.7 Validity and reliability

Data validity and reliability are guaranteed by credibility, transferability, and conformability in qualitative research. For this research, data validity and reliability was done through verifying the content of the interviews with the participants (Appendix E).

3.7.1 Credibility

Credibility refers to accuracy of the data. Have the data been collected accurately? Have the interviews been recorded correctly? (Morrow, 2005). The researcher recorded the interviews with a recorder and transcribed the records using the MSWord package. The transcriptions were then returned to the participants for validation of the accuracy of the data. All participants validated the transcriptions (Appendix E).

3.7.2 Transferability

In qualitative research, the transferability of data is the same as generalisability of information. Because of transferability, the readers are provided with evidence that the research findings can be applied to different contexts, situations, times and populations (Shenton, 2004). For the case of this study, data were collected in Company X, which operates in the Fast Moving Consumer Goods industry with bakery and milling as main divisions in charge of bread, maze, wheat millings, and cereals production. Company X is extremely well managed with strong and exceedingly high standards. Company X is subject to the same law as all the companies in the Fast Moving Consumer Goods industry and therefore functions as required per law. Furthermore, because of the acquisitions that Company X oversees, the company is subject to the law of the various countries where they have these acquisitions. Despite the qualities of Company X, the data cannot be generalised outside of the company's context.

3.7.3 Conformability

The conformability of data refers to whether the researcher complies appropriately with the guidelines of qualitative research through the coherence of the results produced by the research (Shenton, 2004). The conformability of data in this research has been validated as the researcher was assisted by the supervisor in terms of verifying authenticity and the possibility of error in the research method. Data, findings, interpretations, and recommendations were verified.

3.8 Ethical considerations

In terms of research, ethics are norms or standards of conduct that draw the line for acceptable and unacceptable behaviours. The importance of ethical considerations is to avoid fabrication or falsification of data in order to preserve the knowledge and truth. Ethics also create an environment where trust, accountability, and respect exist among researchers and the readers (Resnik, 2011). Ethical considerations protect the research.

In this research, honesty, integrity, confidentiality, objectivity, and beneficence as ethical practices are taken into account.

The researcher obtained a consent letter from Company X that allowed her to collect data from the selected participants (Appendix C). All respondents were informed in advance of the purpose of the research before they agreed to partake in the research.

The selection of participants was done in terms of the department to be studied and the people involved in ERP projects.

The data collected from interviews were not fabricated or falsified. During the interviews, the participants had the right to decline answering; no participant was forced to answer any question. The interview transcriptions were sent to the participants for validation of the content, and all participants validated the transcriptions (Appendix E).

The information gathered from participants is kept confidential and is not discussed with colleagues.

Participants were not (and will not be) exposed, embarrassed, or ridiculed in any way for their participation in the study.

The research did not involve vulnerable groups, for example children, the mentally ill or illiterate interviewees. However, if the interviewees of vulnerable populations such as low social status interviewees would have been selected to be involved in any way in the research, proper consideration of their rights would be prepared for.

Appropriate procedures for the data collection and reporting of results were followed. Data will not be published without the approval of Company X.

All the resources used for the literature review are cited. No form of unpublished information is used without permission.

The research will be published in terms of the rules and regulations of the Cape Peninsula University of Technology.

3.9 Summary

This research explores how audit functions can contribute to the implementation of ERP projects. Because knowledge and truth were gathered from different perceptive and

experienced people and then interpreted and discussed by the researcher, a subjectivist and interpretivist stance has been adopted, leading to the implementation of of an inductive approach and the application of qualitative methods. The design chosen for this research is a case study, with semi-structured interviews as data collection method. Data collection was submitted for ethical consideration. The unit of analysis was identified as the Operation Finance and Information Technology departments and the unit of observation as the employees in the departments. Findings were drawn from interview transcriptions and summarised into categories. From the summary of the findings, sub-themes and themes were developed and discussed in order to answer the main research questions.

In the next chapter, the case study (Company X) and the participants are outlined in more detail. Findings from the interviews are displayed according to the research questions and developed themes, and the headline findings are given.

CHAPTER FOUR: ANALYSIS AND FINDINGS

4.1 Introduction

ERP systems are equipped with automated controls that can be helpful to an organisation when monitoring data or for the approval of transactions (Madani, 2009). However, after the implementation of an ERP system, the automated controls are not always aligned with the organisation. The misalignment of the system with the objectives is the result of inadequate controls within the system (Babaei *et al.*, 2015). The intention to improve ERP project implementation has led the researcher to conduct this study. In order to solve the misalignment problem, the aim of the study has been formulated as exploring how audit functions can contribute to the implementation of ERP projects with the objective to propose a guideline that can improve the implementation processes of ERP projects.

This chapter presents the case study (Company X) selected for the research and the results drawn from the interviews of the 14 participants (Ps). The results of the fieldwork are formulated in terms of findings. The chapter concludes with a summary of the findings and a presentation of the themes developed from the findings. The main research questions are stated below for the ease of the reader.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

RQ2: How can audit functions assist organisations in ERP project implementation?

4.2 The case

The company was founded in 1820 and its corporate offices are situated just north of Johannesburg. The company operates in the Fast Moving Consumer Goods industry and delivers its production across Southern Africa, Eastern Africa, the United Kingdom, Europe, the Middle East, and China. The main divisions are the bakery in charge of bread production and the milling division responsible for the production of maze, wheat millings, and cereal products. The company also has a grocery division, female products, home and personal care products, a confectionary, and a group services division supporting all the services for the group. Following recent acquisitions, the company runs sixteen (16) bakeries, seven (7) wheat mills, three (3) maize mills, one (1) sugar confectionery plant, one (1) home and personal care plant, and twenty-two (22) distribution depots situated in

South Africa, Swaziland and Lesotho. It also has a sales office based in the United Kingdom. The company delivers its products to more than 22,000 retailers, wholesalers, and related outlets on a daily basis with up to 7,500 employees. The company uses Microsoft Dynamics GP (MSDGP) as ERP system. The HR modules used are not from the Microsoft suite.

For Company X, the audit functions/auditors are represented across three divisions: The Operation Finance department (OFD), the internal auditors (IAs), and the external auditors (EAs). P12 mentioned the following: “So you have external auditors KPMG, internal auditors, which is PWC, and the internal staff that you guys met” (Appendix B4:134).

The OFD comprises internal staff tasked with internal audit functions on a daily basis within the company. This department always assists with the ERP projects in terms of verification, reconciliation, and documentation. P11 said that, “when we do our project implementation, we normally have our Operation Finance team with us, depending on the unit that we are working with, which performs the internal audit function for us” (Appendix B3:118).

The internal auditors are an outsourced function to PWC. They perform risk assessment of the ERP project after implementation to ensure that the internal controls implemented mitigate and cover all the risks associated with the implemented system. The IAs can also be involved in the implementation process to verify and sign off on the design of control within the projects if their expertise is needed. P5 said that, “with regard to the implementation of ERP, the auditors generally won’t be involved. And then after it is implemented, to see if it is working, and to assist if the system mitigates and covers all the risks associated with the system that is being implemented. And then you can do a risks assessment afterwards, but not during the implementation” (Appendix B2:110). P12 stated that “internal auditors go a little bit further than external auditors. So the first part I have explained now is both internal and external. Internal goes so far to check the design of control within the projects. So I have them sign off on what control should be going forward” (Appendix B4:130).

The EAs are outsourced to KPMG. They provide Company X with guidelines on of reporting compliance. They support Company X in knowing what is required in terms of national and international governance. P12 mentioned that, “the external auditors are not

as much into details as the internal guys. We consult the external guys on methodology, processes, practices, other than the details concrete of the project itself" (Appendix B4:131).

4.3 The participants

Fourteen (14) participants were interviewed. The details (job title, years of experience and work specifications) of each participant are presented in Table 4.1. The participants have years of experience in ERP project implementation. The participants include the CIO, manager, operational manager, IT specialist and finance specialist. Consent was obtained from top management to conduct the interviews with the participants (Appendix C). The participants also gave consent to be interviewed and recorded (Appendix B1 to B6).

Table 4.1: Job title, years of experience, work specification of participants
(Participants gave permission to use their names but for this study, it was decided to mask them)

Job title	Years of experience	Work specifications
Operation Finance	More or less14 years	Operation finance and internal auditing
Group Credit Manager	18 years with Company X	Collecting the money from debtors
Corporate Finance Management Accounting	13 years	Operation finance and internal auditing
Tax Adviser	25 years with Company X	Tax advisory
Operational Process Controller	1 year with Company X	Operational process controller
Operation Finance at the Bakery Division	6 years with Company X	Operation finance and internal auditing (bakery)
Operation Finance Manager for Milling	17 years with Company X	Operation finance and internal auditing (milling)
Operation Finance Bakery and Groceries	20 years with Company X	Operation finance and internal auditing (groceries)
Human Resources Manager	5 years with Company X	Looking after strategic people resources
Team Leader on IT Projects Grocery Division	8 years with Company X	IT project implementation on the grocery side
Consultant and Application Support Manager	28 years with Company X	Looking after the consultants on the project and application support side
Chief Information Officer	18 years with Company X	In charge of IT for 13 years and in charge of finance for 5 years

Job title	Years of experience	Work specifications
Baking Team Lead on IT Projects Business One	Eleven (11) months at Company X but over 30 years of experience in the IT industry doing consulting in financial information systems. “I have done a lot of ERP systems and implementations such as GP, Sage x3, Division, and SAP”	Not provided
IT Governance, Risks Security and IT Audit	5 years	Governance, risk and compliance, and security

4.4 Data analysis

In this chapter, analysis of the perceptions of each participant collected during the interviews is discussed. Group and individual interviews were conducted to collect data. There were three group interviews with three to four people per group, and three individual interviews. Interviews were transcribed and mailed to the participants for validation of the correctness and the intent of the participants (Appendix E). Interview answers from participants were copied to an Excel spreadsheet and summarised by the researcher (Figure 4.2). Figure 4.2 is a screenshot of the Excel spreadsheet showing the summary of the participants’ answers to IQ 1.1.2 for Group Interview 1. The remainder of the answers for all the IQs have been summarised in the same way to draw findings.

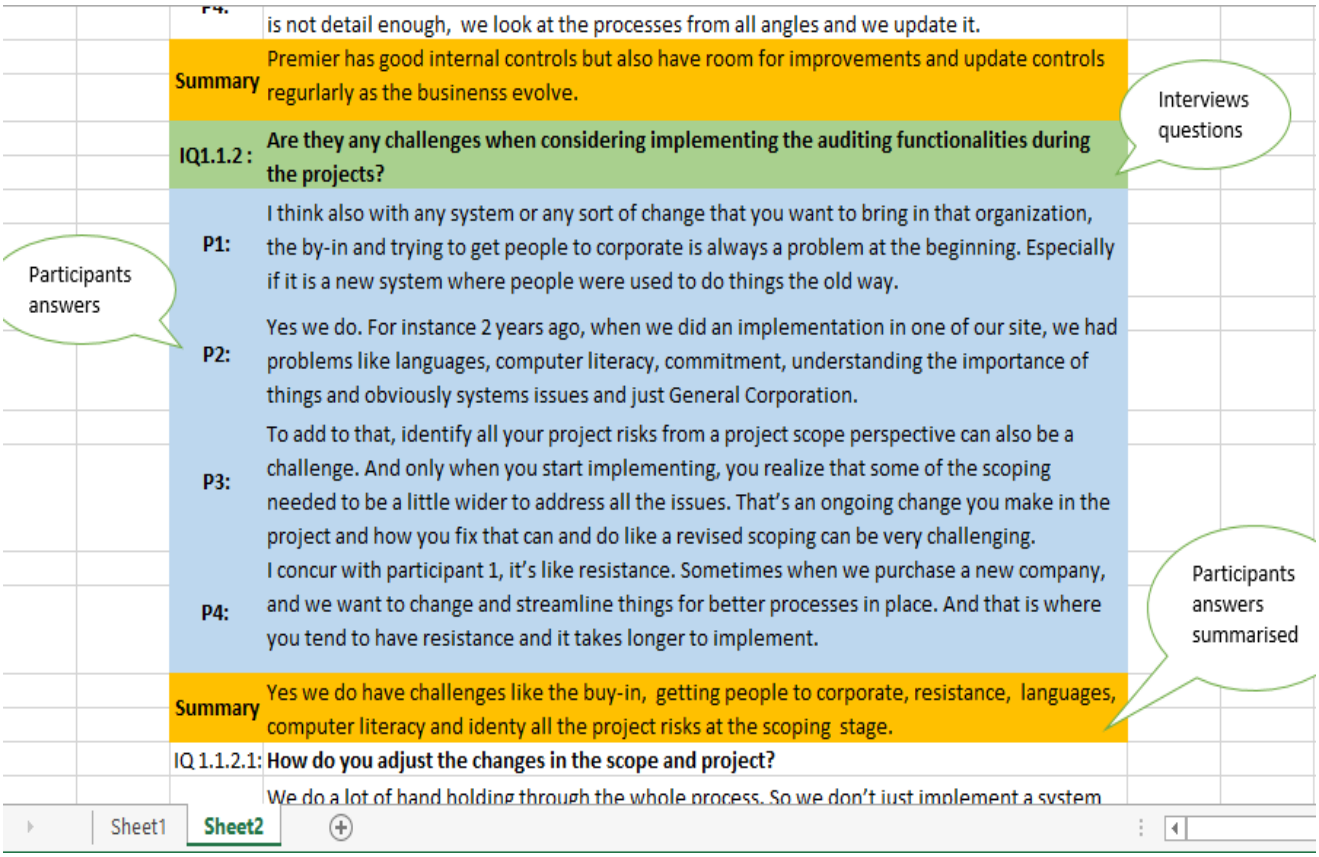

Figure 4.2: Example of a summary of the participants' answers

4.4.1 The findings

Findings were drawn from the summary of the participants' answers. Findings are presented below according to the IQs.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

IQ 1.1.1: *Is there a lack of audit and internal controls in your organisational structure?*

Thirteen (13) of the 14 participants stated that the audit functions around the ERP system and IT controls are very strong. There is no lack of auditing and internal controls because the system is structured in a way that always verifies the users. There are many internal controls in the projects, including checks and balances, reviews, and sign-offs. The company has fair procedures in place and continuously upgrades the internal controls as

the business evolves. Risk mitigation is at an acceptable level. However, there is room for improvement. P12 argued that there is lack of audit control at the macro process level (from order to invoice cycle): “We specialise quite a lot in our supply chain, we’ve got very good controls there. Where we are not so good it is when you look at macro process level as your order to invoice cycle, we are not as good” (Appendix B4:122).

Finding 1: There is a lack of auditing functionality at the macro level, but there are many internal controls and verification at the supply chain level

IQ 1.1.2: *Are there any challenges when considering auditing functionality during the project? If yes, please specify?*

P13 said there are no challenges as all the projects are done according to documentation and governance, following the audit, verification, and sign-off processes. P14 added that there are no challenges, as the culture of the company in terms of having a certain level of audits and controls is substantial. “There is a lot of governance and controls built around the projects, and from a system point of view, we always work from the most restrictive stock” (Appendix B6:149). However, P4, P5, and P6 mentioned that they face some challenges in terms of the buy-in, getting people to cooperate, resistance, language, computer literacy, and dealing with new countries, which means new legislation and different tax laws can be a challenge. Adding to this, P7 indicated that identifying all the project risks from a project scope perspective could be a challenge. The on-going changes made to the project in terms of fixing and revising the scope when the implementation has already commenced, can be extremely challenging. P7 stated:

> “Identify all your project risks from a project scope perspective can also be a challenge. And only when you start implementing, you realise that some of the scoping needed to be a little wider to address all the issues. That’s an on-going change you make in the project and how you fix that can and do like a revised scoping can be very challenging” (Appendix B2:108).

Furthermore, P3 and P12 said the auditors could be a challenge, firstly, because the audit industry has a great deal of theoretical knowledge but very limited practical knowledge, and secondly, their knowledge and skills from a technical perspective around computer-based systems to deal with huge volumes of data are extremely limited. P12 stated that they have to educate and help them deal with the large volume of transactions (Appendix B4).

Finding 2: Getting people to cooperate is a challenge in terms of audit functionalities

Finding 3: IA can be a challenge during projects because their practical skills and computer-based knowledge to deal with huge volumes of transactions are very limited

IQ 1.1.3: *Is the project team only composed of IT specialists? If yes, why? If no, why not?*

All the participants agreed that the project team is not only composed of IT people. The project team involves all the departments (financial, operational, and technical). The team comprises people from the IT department, the customer (which is the business specialist), and/or people from the department of the business involved in the project. The OFD is also involved throughout the project for verification and reconciliation purposes, and the business specialist involved is not necessarily an auditor but performs the audit functions.

Finding 4: The project team is composed of people from the OFD, IT and Business departments affected by the project

SRQ 1.2: What audit functions are needed when implementing an ERP system?

IQ 1.2.1: *What is your opinion of the importance and contributions of auditors and their functions during the implementation process?*

P3 and P14 stated that it is imperative for the OFD to become involved when implementing processes as they contribute significantly to the project's success. The OFD performs the internal audit functions on a daily basis within the company. They also perform checks, balances and reconciliation, and documents the processes in the project. They indicate what happened and did not happen, and the other members of the project team can learn from this to improve the next process. P14 stated that "the contribution of auditors is very important as it is sanity checking. They also provide assurance to management as well as executives. Their contribution is very needed and it should be continued" (Appendix B6:150). Furthermore, the OFD plays an extremely important role. They ensure that the controls are still in place when the rest of the team is under pressure and too focused on their job. P11 stated that "their support is very important for us because sometimes, the IT just want[s] to get done and complete the project. And the auditors ensure that the financial controls are implemented and that they mitigate the

risks" (Appendix B3:118). Moreover, the OFD also ensures quality and confirms that the team is doing the work correctly. They can point out an issue and correct it before the project team actually implements it, leading to saving time and money from correcting it after the implementation is done. P4 said that "It is very important to have auditors during the implementation process because they pick up potential errors during the implementation phase, and we will save time and money in correcting them early, as changes are very costly if you are already live" (Appendix B1:101).

The IAs, who are outsourced to PWC, are not always involved, but they can be needed in certain circumstances depending on how big the project is for the company. If it is a small project, it is not worth the cost to have IAs involved. However, after project implementation the internal auditors perform a risk assessment. The risk assessments do not happen during implementation. P5 mentioned that IAs are mostly involved to determine if the system mitigates and covers all the risks associated with the system that is being implemented, but that this is only done after implementation (Appendix B2). IAs should not become involved in the project implementation processes. It can sometimes compromise independence. P6 said: "Because if you are part of the implementation, you already have preconceived ideas of how you would want it to work rather than come in with a fresh set of eyes and see is it working the best it should (Appendix B2:110). P7 added that "if you have them in the implementation, how do they say later objectively that the system is mitigating all the risks because they were part of that plan? Especially if it is exactly the same person that is coming" (Appendix B2:110).

For the EAs [KPMG], P3 and P11 were of the opinion that they will not necessarily be involved in the project except if it is on a new Great Plan (GP) implementation, as the EAs mainly provide the project team with guidelines in terms of reporting compliances. Furthermore, for international acquisition where a new project is being implemented, the EAs support the project team in knowing what is required from the company in terms of international governance, from planning the project, to the site and after implementation.

Contrary to this, P13 said that it is not necessary to have auditors (IAs and EAs) in the implementation process because they have a different view, which tends to slow down the process (Appendix B5).

Finding 5: The OFD performs the internal audit functions on a daily basis within the company; they also perform checks, balances and reconciliation, and document the processes in the project

Finding 6: The OFD is extremely important as it conducts sanity checking

Finding 7: IAs perform a risk assessment after the system has been implemented to verify that the risks are mitigated and that the internal controls in place function as expected

Finding 8: The OFD and IAs ensure that the financial controls are implemented and that the risks are mitigated

Finding 9: The OFD ensures project quality and verifies that the team is doing the work correctly

Finding 10: The OFD can detect potential errors before the system goes live

Finding 11: EAs are involved in the implementation of a project when it is a new GP implementation in order to provide the team with guidance on reporting compliances

IQ 1.2.2: *Are there any consultations with the auditors when implementing the ERP system? If yes, why? If no, why not?*

There is consultation with the OFD at the 'stage gates' of every project for verification and control purposes. P14 said that consultation definitely takes place with the OFD performing the internal auditing function in the company on a daily basis at the stage gates of every project (Appendix B6).

There are consultations with the IAs when they are involved in the implementation processes to verify the design of the controls to be implemented. P12 said that internal auditors go "so far to check the design of control within the projects. So I have them sign off on what control should be going forward" (Appendix B4:130).

The EA assist with methodology, processes, and practices that relate to the project, and are therefore consulted when needed. P12 said: "We consult the external guys on methodology, processes, practices, other than the details concrete of the project itself.

So we will discuss with them the plan for the year to change the financial reporting standards, some stock, maybe some data. And then they will tell us to make it easy for them" (Appendix B:131).

Contrary to P12 and P14, P13 mentioned that there are no consultations with the auditors because the processes are "so standardised and so reignited anyway that this is all covered already… I think the way they have set the rules is ingenious and it is not spiteful to the business but there are so many checks and balances" (Appendix B5:144).

Finding 12: There are consultations with the OFD at every stage gate

Finding 13: There are consultations with IAs to verify the design of the controls to be implemented

Finding 14: There are consultations with EAs to assist with methodology, processes, and practices that relate to the project

IQ 1.2.3: *What are the audit functions that you deploy during the implementation process of the ERP system?*

The functions that the auditors (OFD, IAs and EAs) deploy vary from project to project, thus, the functions are project specific. For some projects, the IAs focus on finding essential information and identify the risks and design internal controls required for the success of the project. On other projects, the IAs will perform risk assessment after implementation. P12 stated that the audit functions deployed depend on the projects. In some projects, the internal auditors do the IT work in terms of research and the OFD does the audit work. In a project that includes the selection of technology, the IAs might have to conduct research for risk identification, and they will also have to be involved in the controls and measurements that are being implemented (Appendix B4). The OFD is responsible for checks and balances, reconciliations and controls, and any other verification that needs to be performed. P14 pointed to other deployed functions, namely "audit controls, reconciliations, booking controls, risk management, checks and balances… It [the functions] is most likely financial controls" (Appendix B6:151).

Finding 15: The OFD deploys risk management and audit controls during project implementation

Finding 16: IAs provide information necessary to design appropriate internal controls in some projects and perform risk assessment after implementation in other projects

RQ2: How can audit functions assist organisations in ERP project implementation?

SRQ 2.1: How do organisations use the audit functions of the implemented ERP system?

IQ 2.1.1: *If there are no auditors involved, how do you audit the implementation process? Is there always an auditor involved?*

P1, P3, P12, and P14 mentioned that financial controls are performed by the project team. Most of the project team members have a financial background; they also perform audits such as financial controls, reconciliations, balance sheet reconciliation, and trial balance checks. The OFD performs audit functions such as risk management, checks, balances, and reconciliations during the implementation and assists the users after the project. P11 indicated that the IAs and EAs are not always present in all the projects, but the OFD, which performs the IA functions within the company on daily basis, is present. It is a company requirement for the OFD to be involved during the entire project, from beginning to end (Appendix B3). P10 added: "Also, after implementation, we always stay on site for a month end to make sure that they understand the new process, and we ensure that the system works 100% right and that everyone understands it before we hand it over to support" (Appendix B3:119).

Furthermore, there are Service Level Agreements (SLAs) in place among the various departments to review the project implementation team's performance on every project. The SLAs are procedures built into the system that focus on evaluating and checking the project process implementation and the project team performance. P3 stated that "if there are no auditors involved in the process… we have SLAs in place between departments to be able to measure and monitor the process implementation and performance on it" (Appendix B1:103). Moreover, there are monthly meetings called INVOCOM, which consist of going through the SLA processes in order to review what is required. P2 stated that:

> "INVOCOM is [a] meeting around the different business processes. Some departments have morning [meetings], some once a week. As a corporate finance

[member], I have it once a month and it's you and your team and having cross-functional team members to discuss your goals and obstacles that you are facing to reach your goals, and that's why we discuss the SLAs in those INVOCOM meetings and all these things obviously filter on your scorecard" (Appendix B1:104).

P3 pursued this: "We do have a specific INVOCOM for legal; we sit and we go through all the processes, what we require from them and what they require form us to maybe able to streamline it" (Appendix B1:103).

Finding 17: Most of the project team members have a financial background and are equipped to perform audits such as financial controls, reconciliations, balance sheet reconciliation, and trial balance checks

Finding 18: The OFD is always present in every project to perform the internal audit functions

Finding 19: The SLA procedures and INVOCOM meetings in place are used during project implementation; they also serve as an audit function to the project

Finding 20: The OFD stays on site over a month end to ensure that the system works as it should and that the users understand it

IQ 2.1.3: *How involved are the auditors in the implementation process of the ERP system?*

The OFD is significantly implicated in the project from beginning to end and they bring support to the project team. P11 said that "they are very much involved; they actually become part of the team and help us through the whole implementation process" (Appendix B3:119). P12 mentioned that, "the internal staff however is very deeply involved in the implementation. They actually head up an internal audit for us" (Appendix B4:134).

Regarding the IAs, they are not always involved in the implementation processes but only become involved when necessary. However, they always perform a risk assessment after every project implementation. P5 mentioned that the internal auditors are mostly involved to determine if the system mitigates and covers all the risks associated with the system being implemented, and this is only done after implementation (Appendix B2). P12 stated that internal auditors are not too involved unless there is a need for them to be there,

usually for Best Practices (BP) and system review. If the team does not have the capacity, they will involve the IAs (Appendix B4).

The external auditors are also not too involved in the project except when the team is doing a new GP project implementation. They mainly become involved when guidance for compliance and reporting procedures is necessary, for support in the balancing of the General Ledger and Trial Balance, and to ensure that processes are working properly. The EAs furthermore provide assistance for the project to be implemented in the nearby future. P12 stated that "the external auditors are not really involved; they review after the fact and they give advice on processes before, typically a whole year in advance" (Appendix B4:125). P12 also stated that, "we consult the external guys on methodology, processes, practices, other than the details concrete of the project itself. So we will discuss with them the plan for the year to change the financial reporting standards, some stock, maybe some data. And then they will tell us to make it easy for them" (Appendix B:131).

Finding 21: The OFD is deeply involved in every project implementation and performs the internal audit functions

Finding 22: The IAs and EAs are implicated not in every project, but in the projects where their expertise is needed

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

IQ 2.2.1: *What are the benefits that auditors bring when they are involved in the implementation process?*

The auditors (OFD, IAs and EAs) in a project bring assurance in terms of processes, project structures, finance, and internal controls. P14 argued that auditors (OFD, IAs and EAs) bring "financial assurance, processes assurance, structures and controls assurance. There is also outside opinion assurance" (Appendix B6:151). P11 pursued this: "It is beneficial to have auditors because they keep you financially sound" (Appendix B3:119). Furthermore, in many cases the project team grows so attached to the project that they become very subjective and therefore struggle with making objective decisions. Auditors (OFD) maintain the objectivity in the project. P12 mentioned:

> "The project becomes your baby and you become a little bit emotional about it. They become very attached to the project and defend it at all cost. People really stop thinking out of the box. They might be the best out of the box thinker, half way through the project that's all gone. Auditors keep on bringing that way of thinking and add a little bit of a different psychology to it" (Appendix B4:135).

Moreover, the auditors (OFD, IAs and EAs) ensure that the project is of good quality and that the quality standards are met. P3 supported this by saying that auditors "can ensure that the quality is there and that you are doing it correctly" (Appendix B1:101).

Finding 23: Auditors (OFD, IAs and EAs) bring objectivity and assurance in terms of finances, processes, structure, and internal controls

IQ 2.2.2: *What are the disadvantages when auditors are part of the implementation team?*

One of the disadvantages is that auditors (IAs and EAs) need to understand how the company works before they can contribute to the project. This process requires training and can be time consuming. P1 stated that:

> "Because we are referring to the implementation of ERP systems, that does not happen every month or every year. It happens once in three, five, or ten years now for external consultants or auditors [IA and EA] coming to our business to understand how our business works. From a system description point of view like participant 4 said, it is going to take them much longer to understand our business... So from a time point of view, there will be a lot on the job training for external consultants to understand our business before we can actually get down to what are the real risks and opportunities in the ERP system" (Appendix B1:104).

P11 indicated that there needs to be training time with the auditors (IAs and EAs) first as they are always somewhat left behind, which is time consuming and fairly complex. When external consultants (IAs and EAs) are involved, they "always send a junior auditor who does not always understand what is going on and you have to explain everything to him. They usually ask us questions that are time consuming from an IT side but that might have different benefits from a business side" (Appendix B3:119).

Because of the time IA and EA auditors take to understand how the business works, the cost of having them is relatively high. P1 added that "time is obviously money with external consultants" (Appendix B1:105). P6 mentioned that it is costlier to Company X to have IAs and EAs in the projects (Appendix B2).

IAs and EAs in a project can slow down the implementation process. P4 stated that "it might take longer to implement because as we add another function, obviously there is a time factor, but the advantages overshadow the disadvantages" (Appendix B1:104). Additionally, because the IAs and EAs have limited knowledge of the business, they usually recommend good theoretically controls that clash with the operations. P7 said: "Beside the independence being compromised, the external auditors or audit firms do not always have deep knowledge about our business, so they might recommend controls that we know are not going to work" (Appendix B2:111). P3 added that:

> "Some of the auditors [IAs] are too theoretical, so what happens is that they want this and this. However, it is not always practical and cost-effective and it is clashing with operations. Auditors [IAs] recommend controls that are most of the time the best theoretically but in operation, it takes away certain efficiency. So, it takes longer to bake and the longer you bake, the less output you have and the less you can sell" (Appendix B1:104).

Apart from what is mentioned above, the auditors (OFD, IAs and EAs) are perceived to be a blockage to the project because of the checks and balances they perform. P12 and P14 mentioned that auditors (OFD, IAs and EAs) are usually perceived as policing and causing bottlenecks in terms of moving forward with the project. Regarding the stage gates, the project team might see it as hindering them from moving forward with the project. Audit functions and auditors (OFD, IAs and EAs) are always seen as a policing function, checking the work performed by others.

Finding 24: It is costly to have external consultants (IAs and EAs) in an implementation process

Finding 25: Having IAs and EAs in the project implementation requires much training to educate them, which can be time consuming

Finding 26: Auditors (OFD, IAs and EAs) can be perceived as policing and causing a bottleneck in moving forward with the project

Finding 27: Most of the time auditors (IAs) recommend the best theoretically control, but that takes away practical efficiency

IQ 2.2.3: *How can your organisation benefit when introducing auditors to the implementation team?*

The input of auditors (OFD, IAs and EAs) contributes significantly to the success of the project. Their input mainly consists of checks and balances, structuring the project team in terms of risks and controls, documenting the project, pointing out issues before implementation, and ensuring the quality of the project. P3 mentioned:

> "I think it's quite important that auditors get involved. Not necessarily external auditors but the internal team as well when implementing processes. Because, they can document the processes, mention what happen and did not happen, and you can learn form that to improve the next process. They can ensure that the quality is there and that you are doing it correctly. They can point out an issue and correct it before you actually implement it and saves you time from correcting it after implementation is done" (Appendix B1:101).

P14 said that auditors bring "financial assurance, processes assurance, structures and controls assurance. There is also outside opinion assurance" (Appendix B6:151).

4.4.2 Summary of findings

In this section, the findings derived in section 4.4.1 are grouped and listed according to the SRQs in tables 4.2, 4.3, 4.4 and 4.5. In tables 4.6 and 4.7, the findings are grouped according to the RQs and categorised to develop sub-themes and themes. Tables 4.8 and 4.9 present the sub-themes and themes according to the RQs. Table 4.10 presents a summary of the themes, and table 4.11 presents the summary of the themes according to the RQs.

Because semi-structured interviews were used to collect data (section 3.6.3), findings answering the IQs associated with RQ1 are also found in the answers provided for the IQs associated with RQ2 and *vice versa*. Findings are grouped according to the SRQs they answer.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

For SRQ 1.1 there are seven (7) findings, summarised in Table 4.2.

Table 4.2: Findings for SRQ 1.1

Finding No.	Finding description
Finding 1	There is a lack of auditing functionality at the macro level, but there are many internal controls and verification at the supply chain level
Finding 2	Getting people to cooperate is a challenge in terms of audit functionalities
Finding 3	IA can be a challenge during projects because their practical skills and computer-based knowledge to deal with huge volumes of transactions are very limited
Finding 24	It is costly to have external consultants (IAs and EAs) in an implementation process
Finding 25	Having IAs and EAs in the project implementation requires much training to educate them, which can be time consuming
Finding 26	Auditors (OFD, IAs and EAs) can be perceived as policing and causing a bottleneck in moving forward with the project
Finding 27	Most of the auditors (IAs) recommend the best theoretically control, but that takes away practical efficiency

SRQ 1.2: What audit functions are needed when implementing an ERP system?

For SRQ 1.2, the findings are summarised in Table 4.3.

Table 4.3: Findings for SRQ 1.2

Finding No.	Finding description
Finding 5	The OFD performs the internal audit functions on a daily basis within the company; they also perform checks, balances and reconciliation, and document the processes in the project
Finding 7	IAs perform a risk assessment after the system has been implemented to verify that the risks are mitigated and that the internal controls in place function as expected
Finding 10	The OFD can detect potential errors before the system goes live
Finding 11	EAs are involved in the implementation of a project when it is a new GP implementation in order to provide the team with guidance on reporting compliances
Finding 12	There are consultations with the OFD at every stage gate
Finding 13	There are consultations with IAs to verify the design of the controls to be implemented
Finding 14	There are consultations with EAs to assist with methodology, processes, and practices that relate to the project
Finding 15	The OFD deploys risk management and audit controls during project implementation
Finding 16	IAs provide information necessary to design appropriate internal controls in some projects and perform risk assessment after implementation in other projects

RQ2: How can audit functions assist organisations in ERP project implementation?

SRQ 2.1: How do organisations use the audit functions of the implemented ERP system?

For SRQ 2.1, the findings are summarised in Table 4.4.

Table 4.4: Findings of SRQ 2.1

Finding No.	Finding description
Finding 4	The project team is composed of people from the OFD, IT and Business departments affected by the project
Finding 17	Most of the project team members have a financial background and are equipped to perform audits such as financial controls, reconciliations, balance sheet reconciliation, and trial balance checks.
Finding 18	The OFD is always present in every project to perform the internal audit functions
Finding 21	The OFD is deeply involved in every project implementation and performs the internal audit functions
Finding 22	The IAs and EAs are implicated not in every project, but in the projects where their expertise is needed
Finding 19	The SLA procedures and INVOCOM meetings in place are used during project implementation; they also serve as an audit function to the project
Finding 20	The OFD stays on site over a month end to ensure that the system works as it should and that the users understand it

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

For SRQ 2.2, the findings are summarised in Table 4.5.

Table 4.5: Findings for SRQ 2.2

Finding No.	Finding description
Finding 6	The OFD is extremely important as it conducts sanity checking
Finding 8	The OFD and IAs ensure that the financial controls are implemented and that the risks are mitigated
Finding 9	The OFD ensures project quality and verifies that the team is doing the work correctly
Finding 23	Auditors (OFD, IAs and EAs) bring objectivity and assurance in terms of finances, processes, structure, and internal controls

4.4.3 Theme development

From the summary of the findings mentioned in section 4.4.2, the researcher categorised the finding(s) identified from each SRQ to develop sub-themes per RQ. Table 4.6 presents the findings, categories, and sub-themes related to RQ1. The main idea of each finding per RQ is indicated in the category column. From the category, the main topic is identified and written under the sub-themes column. Table 4.7 presents the findings, categories, and sub-themes related to RQ2.

Main idea from the finding

Table 4.6: Findings, categories/sub-themes and themes for RQ1

Finding from Excel summary

RQ1		Categories/Sub-themes	Themes
Finding 1	There is a lack of auditing functionality at the macro level, but there are many internal controls and verification at the supply chain level	Audit functions in the system	Audit of the project
Finding 2	Getting people to cooperate is a challenge in terms of audit functionalities	Challenges in the implementation processes	Implementation processes
Finding 3	IA can be a challenge during projects because their practical skills and computer-based knowledge to deal with huge volumes of transactions are very limited	Skills and knowledge of the internal auditors (IAs)	Skills and knowledge
Finding 24	It is costly to have external consultants (IAs and EAs) in an implementation process	The cost to involve external consultants	Finance cost
Finding 25	Having IAs and EAs in the project implementation requires much training to educate them, which can be time consuming	Training for IAs and EAs in the project	Skills and knowledge
Finding 26	Auditors (OFD, IAs and EAs) can be perceived as policing and causing a bottleneck in moving forward with the project	Auditors in the projects	Audit of the project
Finding 27	Most of the time auditors [IAs] recommend the best theoretically control, but that takes away practical efficiency	IA recommendations	Audit of the project

Main topic from category presented as sub-theme

Finding from Excel summary

RQ1		Categories/Sub-themes	Themes
Finding 5	The OFD performs the internal audit functions on a daily basis within the company; they also perform checks, balances and reconciliation, and document the processes in the project	The OFD in the project	Operation Finance department
Finding 7	IAs perform a risk assessment after the system has been implemented to verify that the risks are mitigated and that the internal controls in place function as expected	IAs in the project	Audit of the project
Finding 10	The OFD can detect potential errors before the system goes live	The OFD in the project	Operation Finance department
Finding 11	EAs are involved in the implementation of a project when it is a new GP implementation in order to provide the team with guidance on reporting compliances	The EAs in the project	Audit of the project
Finding 12	There are consultations with the OFD at every stage gate	Consultations with the OFD auditors	Consultations
Finding 13	There are consultations with IAs to verify the design of the controls to be implemented	Consultations with internal auditors (IAs)	Consultations
Finding 14	There are consultations with EAs to assist with methodology, processes, and practices that relate to the project	Consultations with external auditors (EAs)	Consultations
Finding 15	The OFD deploys risk management and audit controls during project implementation	The OFD in the project	Operation Finance department
Finding 16	IAs provide information necessary to design appropriate internal controls in some projects and perform risk assessment after implementation in other projects	IAs in the project	Audit of the project

Table 4.7: Findings, categories/sub-themes and themes for RQ2

RQ2		Categories /Sub-themes	Themes
Finding 4	The project team is composed of people from the OFD, IT and Business departments affected by the project	The OFD in the project	Operation Finance department
Finding 6	The OFD is extremely important as it conducts sanity checking	The OFD in the project	Operation Finance department

RQ2		Categories /Sub-themes	Themes
Finding 8	The OFD and IAs ensure that the financial controls are implemented and that the risks are mitigated	The OFD and IAs in the project	Audit of the project
Finding 9	The OFD ensures project quality and verifies that the team is doing the work correctly	The OFD in the project	Operation Finance department
Finding 17	Most of the project team members have a financial background and are equipped to perform audits such as financial controls, reconciliations, balance sheet reconciliation, and trial balance checks	The project team equipped to perform audits	Audit of the project
Finding 18	The OFD is always present in every project to perform the internal audit functions	The role of the OFD	Audit of the project
Finding 19	The SLA procedures and INVOCOM meetings in place are used during project implementation; they also serve as an audit function to the project	SLAs and INVOCOM as audit function	Audit of the project
Finding 20	The OFD stays on site over a month end to ensure that the system works as it should and that the users understand it	The OFD after the implementation processes	Operation Finance department
Finding 21	The OFD is deeply involved in every project implementation and performs the internal audit functions	The OFD in the project	Operation Finance department
Finding 22	The IAs and EAs are implicated not in every project, but in the projects where their expertise is needed	IAs and EAs in the project	Audit of the project
Finding 23	Auditors (OFD, IAs and EAs) bring objectivity and assurance in terms of finances, processes, structure, and internal controls	Auditors in the project	Audit of the project

4.5 Themes developed

The themes were developed from the sub-themes identified from tables 4.6 and 4.7. The researcher grouped the sub-themes and identified the main themes that the participants mentioned. Tables 4.8 and 4.9 present the themes associated with RQ1 and RQ2.

Table 4.8: Sub-themes and themes for RQ1

Sub-themes	Themes
Audit functions in the system	**Audit of the project**
Challenges in the implementation process	**Implementation processes**
Skills and knowledge of IAs	**Skills and knowledge**

Sub-themes	Themes
The cost to involve EAs	**Finance cost**
Training for IAs and EAs in the project	**Skills and knowledge**
Auditors in the projects	**Audit of the project**
IA recommendations	**Audit of the project**
The OFD in the project	**Operation Finance department**
IAs in the project	**Audit of the project**
The OFD in the project	**Operation Finance department**
The EAs in the project	**Audit of the project**
Consultations with OFD	**Consultations**
Consultations with IAs	**Consultations**
Consultations with EAs	**Consultations**
The OFD in the project	**Operation Finance department**
IAs in the project	**Audit of the project**

Table 4.9: Sub-themes and themes for RQ2

Sub-themes	Themes
The OFD in the project	**Audit of the project**
The OFD in the project	**Audit of the project**
The OFD and IAs in the project	**Audit of the project**
The OFD in the project	**Operation Finance department**
The project team equipped to perform audits	**Audit of the project**
The role of the OFD	**Operation Finance department**
SLAs and INVOCOM as audit function	**Audit of the project**
The OFD after the implementation process	**Operation Finance department**
The OFD in the project	**Operation Finance department**
IAs and EAs in the project	**Audit of the project**
Auditors in the project	**Audit of the project**

In Table 4.10, the audit of the project themes with 13 findings are predominant, which makes it the main concerns for the success of ERP projects. This is followed by the Operation Finance department with seven findings, consultations with three findings, and skills and knowledge with two findings. Lastly, implementation processes and finance cost are found with one finding each.

Table 4.10: Summary of the themes

	Audit of the project
	Operation Finance department
	Consultations
	Skills and knowledge
	Implementation processes
	Finance cost

The themes are linked to the RQs. Tables 4.11 and 4.12 display the themes associated with the RQs.

Table 4.11: Themes for RQ1

Research question	Themes
RQ1: **What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?**	➢ Skills and knowledge ➢ Operation Finance department ➢ Implementation processes ➢ Consultations ➢ Audit of the project

Table 4.12: Themes for RQ2

Research question	Themes
RQ 2: **How can audit functions assist organisations in ERP project implementation?**	➢ Implementation process ➢ Consultations ➢ Finance cost ➢ Audit of the project

4.6 Summary

For this research, fourteen (14) participants were interviewed. Participants included the CIO, Manager, Operational Manager, IT Specialist, and Finance Specialist. All the participants have years of experience in ERP implementation projects.

From the data analysis, findings were presented for each IQ. From the findings gathered, the following headlines were identified:

Headline 1: Cooperation from employees is a challenge

Headline 2: Internal auditors (IAs) are limited in terms of practical skills and knowledge of IT techniques to deal with huge volumes of data

Headline 3: IT and business people work together from the planning to the post-implementation of a project

Headline 4: The OFD performs internal audit functions in each project and contributes significantly to the success of the project

Headline 5: IAs perform risk assessment after project implementation and are only involved in the implementation process of a project when their expertise is needed

Headline 6: EAs are only involved in the implementation process for new projects to assist with methodology and reporting compliances

Headline 7: Consultations take place with the OFD (at every stage gate of project implementation), IAs and EAs (at project planning level) during the implementation process

Headline 8: It can be time consuming to have internal and external consultants in the project because they need to be educated before they can actually contribute to the project

From the twenty-seven (27) findings, six (6) themes were developed:

i) Audit of the project
ii) Operation Finance Department
iii) Consultations
iv) Skills and knowledge
v) Implementation processes
vi) Finance cost

CHAPTER FIVE: DISCUSSION

5.1 Introduction

The implementation of ERP systems is a complex process that is costly to organisations because of the financial, time and human resources the implementation requires (Babaei *et al*., 2015). Implementation failure in terms of system misalignment can cause major issues to the organisation and might even lead to bankruptcy (Hawari & Heeks, 2010). In order to reduce the risk of implementation failure, this research explores how audit functions can contribute to the implementation of ERP projects. In the previous chapter, findings were derived and themes were developed. To minimise the risk of system misalignment, the following themes should be taken into account when implementing ERP projects: i) audit of the project; ii) Operation Finance department; iii) skills and knowledge; iv) consultations; v) implementation processes; and vi) finance cost.

In this chapter, the themes are discussed and the RQs are answered. From the theme discussions, it is illustrated that the aim of this study is addressed. A guideline is proposed to improve the implementation process of ERP projects to meet the objective of this study.

For the ease of the reader, the problem statement, research questions, aim, and objective of the study are mentioned below:

Problem statement: ERP systems are equipped with automated controls that can be helpful to an organisation when monitoring data or for transaction approvals (Madani, 2009). However, these controls are not always aligned with the organisation‘s objectives. The misalignment of the system with the organisation’s objectives is a result of inadequate controls within the system (Babaei *et al*., 2015).

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

RQ2: How can audit functions assist organisations in ERP project implementation?

Aim and objective of the study: The aim is to explore how audit functions can contribute to the implementation of ERP projects. The objective is to propose a guideline that can improve the implementation process of ERP projects.

5.2 The themes

5.2.1 Theme 1: Audit of the project

The audit of the project theme addresses RQ1 and RQ2.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

Auditing the project is one of the main concerns to succeed in the implementation process. It starts with planning and continues through to the post-implementation phase of the project. In the planning phase, auditing the project consists of analysing the research conducted and the feasibility of the product to be implemented. Identifying the risks linked to the project in order to develop controls that can mitigate these risks is also part of the planning phase. For this case study, such tasks are performed by either the OFD or the IAs, depending on the importance and size of the project. P14 indicated that the OFD performs financial controls and mostly focuses on risk identification and risk mitigation in the planning and scoping phase of the project (Appendix B4). P3 said:

> "I think in terms of this, auditors are not always involved. It will depend on how material the project is. If it is a small project, it is not worth the cost to have external or internal auditors involved. So, obviously, they will have a manager that will sign it off for review. So it all depends on the size and the risks involved in the project" (Appendix B1:103).

RQ2: How can audit functions assist organisations in ERP project implementation?

Previous research indicates that frequent daily meetings and check-ups during the implementation process is a key factor for success. According to Baig, Shah and Sajjad (2017), results show that agile methods (daily scrum meeting, pair programming, and frequent reviews) reduce complexity and increase the quality of ERP implementation. In this case study, auditing the project during the implementation phase is done throughout and consists mainly of frequent meetings, checks and balances, and service level agreements (SLAs). P2, P3, P13, and P14 indicated that the project is subject to stages gates, SLAs, and INVOCOM meetings between departments to verify, measure, and display the process implementation and performance. Stage gates are marker points where the project proceeds from one stage to the next. SLAs measure the level of project quality and the INVOCOM meetings take place weekly or monthly depending on the department, where the team members discuss the challenges they face to complete their

project tasks. INVOCOM meetings consist of working through the SLAs to determine what is required and how the work is conducted. The purpose of the INVOCOM meeting is to go through the work and challenges of the team members and sort them out. P2 confirmed:

> "We are very performance-driven; the pioneer culture is very performance-driven and the only way we can monitor our performances and the obstacles that we have, is by having these INVOCOM meetings and I think all of us believe that there is a positive side of having INVOCOM. It forces people to discuss the issues they are having with one another" (Appendix B1:104).

Therefore, in order to move from one stage to the next, checks, balances, approvals and authorisation are required. P13 stated:

> "Right through we have checks and balances because they sign off before we can carry on to the next stage. So we have that at the stage gate and depending at what stage you are at the project or at the time of the project determines who signs it off. So let's just say at the designing stage, in IT my immediate manager will sign it off, then our architect manager will sign it off and HR will sign it off. So you've got all these checks and balances right the way through. So you continually have your project reviewed and checked as you move through. At the end of the project, I will have my customer HR sign off the project and then will give the project to the IT audit to check if I have got the right documentation and signs off. So we have a lot of internal controls audits" (Appendix B7:141).

Furthermore, the OFD performs internal audit functions such as risk management and internal control implementation to mitigate the risks throughout the implementation process. P7 said in agreement:

> "Obviously, you keep your audit head on, so what I mean by that is that you continue to ask yourself through the whole implementation scoping and project plan what are the risks? And whether the current controls or the planned controls will mitigate those risks. But we as business specialists ask that; we don't get our external or internal auditors to answer those questions for us" (Appendix B2:110).

After the implementation, the OFD performs on the one hand an 'in-house audit' to ensure that the internal controls implemented mitigate the risks identified in the project. They also do a 'handholding' on site with the end user to ensure that the system is understood and used correctly by the end user. Handholding in this case represent a team work, helping out each other, ensure that everyone understands the system for the better results. Auditing is an important function in ERP project implementation to avoid project

failure, but it can also have other effects. In terms of innovation, the audit function is perceived as a limitation for innovation. P1 mentioned that,

> "Innovations are all about being the first to do it. There is a certain limitation when it comes to innovations from a governance point of view because there are rules that you must comply with, and from an ERP system point of view because you cannot just make on ERP overnights [sic] for the innovation to turn into a reality" (Appendix B1:105).

P2 added that "one of the reasons why we haven't been innovative in our GP by changing the version is because such implementation requires the bakery to shut down for a week and we cannot just do it for an implementation like that" (Appendix B1:105).

5.2.2 Theme 2: Operation Finance department

The role of the OFD in ERP projects addresses RQ1 and RQ2.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

The OFD needs to be taken into consideration. It has an important task to perform in the implementation of an ERP project and must be involved in all the projects, from the beginning to the end. P10 mentioned that, "from the planning, the site, and after the implementation, they support in the balancing of GL and TB and ensure that the processes are working properly" (Appendix B3:118). P7 said: "Remember that from a finance perspective we have quite a lot of background as a norm, and risk management as well. And with that in place, it is sometimes easier to use us as almost the expertise in those areas" (Appendix B2:111). P11 added that "with all our projects, we don't have our external auditors but we always have our Operation Finance that performs the audits functions. It is a requirement that we have" (Appendix B3:119).

RQ2: How can audit functions assist organisations in ERP project implementation?

The OFD perform internal audit functions such as risk identification, designing internal controls, and providing objectivity and assurance during the entire implementation process. They contribute significantly to the project in terms of audit functions.

P11 mentioned that:

> "When we do our project implementation, we normally have our Operation Finance team with us, depending on the unit that we are working with, which performs the internal audit function for us. Their support is very important for us because sometimes, the IT just want to get done and complete the project. And the auditors ensure that the financial controls are implemented and that they mitigate the risks" (Appendix B3:118).

P14 indicated that the OFD performs financial controls and mostly focuses on risk identification and risk mitigation in the planning and scoping phase of the project that is being implemented (Appendix B4).

The OFD is also involved in the post-implementation of a project. After every project implementation, the OFD audits the system to ensure that the controls and processes implemented indeed mitigate the risks from a site point of view. P7 explained it well when she mentioned the following: "In other words our Operation Finance team, as well as our site finance function, take that role and go and make certain that all our risks are mitigated" (Appendix B2:111). Moreover, the OFD carries out 'handholding' on site to ensure that the end user understands the new implementation of the system and uses it properly. P7 mentioned that:

> "We do a lot of handholding through the whole process. So, we don't just implement a system on a site and leave people on their own. We have a lot of people helping them until that site is completely familiar. Sometimes it takes a lot of time but we do handholding through the whole process and from our side, we determine when to step away. And it is not a hard and fast move; it really depends on the site but mostly on the business. It is about making certain that when we step away the business does not fall flat" (Appendix B2:108).

5.2.3 Theme 3: Consultations

The consultation process addresses RQ1 and RQ2.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

The consultation process consists of discussing the different factors that might be included or affect the project being implemented. The consultation process involves the project team, the customer, the OFD, and the external consultants (internal and external auditors). The project team discusses the service to be provided, what needs to be done, and how it needs to be done with the customer. P13 mentioned:

> "They have to check everything I do. What we do is that we sit down and discuss it. I tell them what we are going to do so they check it and sign it off. I then do the work; they check it and sign it off. So it is very strict process control throughout the system" (Appendix B5:141).

RQ2: How can audit functions assist organisations in ERP project implementation?

The purpose of theses consultations is to ensure that the project team and the customer agree on the service to be provided and that both are aware of what the implementation is. With the OFD, the consultation process aims to discuss the checks and balances to be done as well as risk identification and internal controls to mitigate the risks. P10 said that "when implementing a new TB system for instance, our corporate finance plays the role of auditors and checks that everything balances" (Appendix B3:117). When the external consultants (IAs and EAs) are involved, the consultation process with the IAs is more about the design of the processes in terms of internal controls. IAs identify the risks and provide a plan to mitigate the identified risks. P12 said the following in agreement:

> "internal auditors go a little bit further than external auditors. So the first part I have explained now is both internal and external. Internal goes so far to check the design of control within the projects. So I have them sign off on what control should be going forward" (Appendix B4:130).

Everything concerning compliance, practices, and methodology required for the project is assessed and discussed with the EAs. They gather the necessary information for the project team. P12 mentioned:

> "We consult the external guys on methodology, processes, practices, other than the details concrete of the project itself [sic]. So we will discuss with them the plan for the year to change the financial reporting standards, some stock, maybe some data. And then they will tell us to make it easy for them; they would want to see these things when you do a financial system. If you do data, they want to see those things; if credit, they want to see those things. So they will give you implementation practices, the kind of content and data and sign it off. So it's not the content, it's not the detail of the project or the project itself, it's more the methodology" (Appendix B4:131).

P11 added that "when we do a new project, we consult our external auditors for the guidelines and compliance. For international companies, they support us in knowing what is required from us from international government" (Appendix B3:118).

5.2.4 Theme 4: Skills and knowledge

The skills and knowledge theme addresses RQ1.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

Known as a complex system that eventually leads to a complex implementation project, the ERP system requires specific skills and knowledge to be implemented successfully. Previous research has shown that technical and human skills are two major factors to be considered in the implementation process as it can significantly affect the success of the project (Ram, Corkendale & Wu, 2015; Totla, Mandot & Gaur, 2016). Amalnik and Ravasan (2018) agree that technical and human skills ultimately influence the success of an ERP project. According to Mahdavian, Wingreen and Ghlichlee (2016), the importance of having human skills lies in the fact that they contribute considerably to building a cooperative effort within the group members and empowering the team to work effectively. P7 confirmed this when she said 'handholding' contributes significantly to the success of the project. Furthermore, human skills are an evaluation of the awareness and acknowledgement of the attitudes that managers, equals, subordinates, and consultants have towards each other as a guide for the way to behave during the project. Mahdavian and Mostajeran (2013) assimilate human skills to the following: i) change management; ii) stress management; iii) negotiation and conflict management; iv) teaching and training skills; v) leadership skills; vi) communication skills; vii) team skills; and viii) personal skills. These skills moderate team language, communication and conflict challenges, and enable the team to work together. Creating a feeling of 'working together' in the project team plays an important role in the success of the project. Some participants were in agreement with this. They mentioned that regular meetings called INVOCOM are held during which they discuss the challenges faced by the project team. P2 said:

> "INVOCOM is [a] meeting around the different business processes. Some departments have morning [meetings], some once a week. As a corporate finance [member], I have it once a month and it's you and your team and having cross-functional team members to discuss your goals and obstacles that you are facing to reach your goals" (Appendix B1:104).

These meetings are purposely tailored to motivate the team to work together towards the same goal.

Technical skills are more practical. These skills support the project and make the implementation process smoother. Mahdavian and Mostajeran (2013) explain the different technical skills involved in an ERP project as follows:

i) **Business processes knowledge** is primarily the understanding of the entire business. A team with the knowledge and understanding of the business processes results in accelerated implementation time and improved changes, and provides a better perception of the improved processes. P2 stated the following in agreement:

> "From a system description point of view like participant 4 said, it is going to take them much longer to understand our business, especially if it is new people every five years because that's how external consultants work, they don't have people for 20, 30 years with experience. So from a time point of view, there will be a lot on the job training for external consultants to understand our business before we can actually get down to what are the real risks and opportunities in the ERP system" (Appendix B1:104).

ii) **Analytical skills** represent the ability to examine the current status of the project implementation, which is a key skill to ensure that the project is conducted as it should. P12 granted this skill to the auditors when he stated:

> "Like I said, they bring that bit of objectivity. In the implementation process, a team very quickly becomes very subjective. The project becomes your baby and you become a little bit emotional about it. They become very attached to the project and defend it at all cost. People really stop thinking out of the box. They might be the best out of the box thinker, half way through the project that's all gone. Auditors keep on bringing that way of thinking and add a little bit of a different psychology to it" (Appendix B4:135).

iii) **System skills** are similar to BP management skills. It is associated with the processes of the organisation and assists with advancing the project in terms of understanding the process integration during implementation. Ram *et al*. (2015) mention that the lack of system skills can lead the team to be task-oriented rather than process-oriented, which will become a source for implementation problems.

iv) **Risk management:** Risks are unavoidable during ERP project implementation. Many changes take place and risks can become a problem, especially with managing the changes, as risk management can influence the success of the project. Therefore, how risks are managed is extremely important to the team. P7 agreed that risk management is needed because managing risks can be quite challenging:

> "Identify all your project risks from a project scope perspective can also be a challenge. And only when you start implementing, you realise that some of the scoping needed to be a little wider to address all the issues. That's an on-going change you make in the project and how you fix that can and do like a revised scoping can be very challenging" (Appendix B2:108).

v) **Organising** consists of forming the team and assigning each member to a specific task according to the phases and tasks to be performed. Team member displacements during implementation can highly impair the success of the implementation. P3 mentioned: "So there is a lot of drive in terms of management to ensure that we involve the right people with the right skills and knowledge to improve and make the project a success" (Appendix B1:100).

Human and technical skills are the most significant skills in an ERP project and can lead to its success or its failure. In ERP literature, researchers point out the importance of selecting the right skills and competence for each project.

5.2.5 Theme 5: The implementation process

The implementation of ERP projects addresses RQ1 and RQ2.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

The implementation process is mainly a sequence of many phases performed to ensure the success of project implementation. Previous research shows six main phases in terms of ERP implementation: i) the selection or planning phase; ii) the design phase; iii) the customisation or development phase; iv) the testing phase; v) the implementation or deployment phase; and vi) the user training and maintenance phase (Abu-Shanab, Abu-Shehab & Khairallah, 2015; Erazo, Arboleda & Pino, 2017). The different phases are discussed below.

i) The selection or planning phase

This first phase mainly consists of planning the project implementation. During the planning phase, the team is assembled, which has to be done cautiously and seriously because the wrong skills in the team can lead to failure (Linam, 2015).

RQ2: How can audit functions assist organisations in ERP project implementation?

From the case of this research, all the participants agreed that they aim to bring in the right skills and knowledge for every project they undertake; therefore, for every project, the project team consists of people from the IT department and Operation Finance department as well as the customer and consultants (IAs and EAs) when needed. P3 argued this point as follows:

> "It should never be only IT. We try to involve all the departments that need to be involved. For instance, any type of bakery project where we make changes in the ERP system, we will include the financial guys, involve the actual operational guys on site as well. And even maybe if you get to a more technical point where you will get the technical guys from the mailing side also to get involved and check that the ERP is producing the information that is needed" (Appendix B1:100).

P12 stated that "internal PWC again, not too much unless we really have to, unless we don't have capacity, we will involve them" (Appendix B4:134).

When each member's role and responsibilities have been established, the project team conducts meetings to identify the problems and works though potential solutions to develop a project plan that will guide the project implementation. The scoping, management objectives, and communication plan are also discussed in these meetings. In cases where external consultants are involved, their contribution takes place during the planning of the project. P12 stated:

> "So firstly, if the project includes the selection of technology, I would have them to do certain research for me that helps me make sure that the product I have selected has a good track record. So I will start there and what is interesting is that their view of a product carries more views way to the Board [sic] and my view for their brand purposes, and that is important. So you will get them to support that. I will help them identify risks. And I will build that into my risk mitigation plan from my side. So they are helping with that risk identification. I would then normally have them review my risk register, review my implementation plan from their side, and get involved in the controls and measurements that I am implementing" (Appendix B4:132).

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

ii) The design phase

During the design phase, the team discusses and plans the project layout and how it will be used by the end users. In other words, the ERP design phase consists of having the

project team and implementation team work out several shapes or configurations for the new system and data migration, they outline roles, and they document standard procedures.

RQ2: How can audit functions assist organisations in ERP project implementation?

For the case of the study, this is the phase where external consultants play a role if their expertise is needed. IAs contribute in the design of the internal controls. P12 said that "So the first part I have explained now is both internal and external. Internal goes so far to check the design of control within the projects. So I have them sign off in what the control should be going forward" (Appendix B4:130).

EA helps with compliances and methodology. P12 said: "That's why I said the external auditors are not as much into details as the internal guys. We consult the external guys on methodology, processes, practices, other than the details concrete of the project itself [sic]" (Appendix B4:131). P11 stated: "Also, when we do a new project, we consult our external auditors for the guidelines and compliance. For international companies, they support us in knowing what is required from us from international government" (Appendix B3:118). In summary, the design is that place where the project team gives shape to the project before developing it.

iii) The customisation or development phase

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

In the customisation or development phase, the aim is to organise the entire system to go live. The phase includes for example tasks such the completion of any customisation required by the project plan and design, the development of user training, and importing data. The phase mainly consists of first resolving the issue with the customer, then writing the code and script. In fact, in ERP implementation, as with any other software development project, first solve the problem and then write the code. Furthermore, the input of the customer in this phase mainly consists of verifying and approving the work to be performed by the IT department. P13 mentioned that "they have to check everything I do. What we do is that we sit down and discuss it. I tell them what we are going to do

so they check it and sign it off. I then do the work; they check it and sign it off. So it is very strict process control throughout the system" (Appendix B5:141). P8 mentioned:

> "We also try not to go hard and fast at implementing every single thing at the same time. We try to scope each stage at a time, see if works and then move to next stage. It also helps avoiding the resistance as users can see that the project is working well, therefore the next stage might be better for us as well" (Appendix B2:108).

iv) The implementation or deployment phase

RQ2: How can audit functions assist organisations in ERP project implementation?

This phase focuses on deployment of the client system, preparing a go-live plan and documentation, integration with other applications, and data migration (Porter *et al*., 2014). The project team as well as the implementation team will assess the situation and make the final go or no-go decision. Prior to going live, the final data will be loaded and validated. The project team will train other employees who will then start working on the new system and completely stop using the old one. P7 said:

> "We do a lot of handholding through the whole process. So, we don't just implement a system on a site and leave people on their own. We have a lot of people helping them until that site is completely familiar. Sometimes it takes a lot of time but we do handholding through the whole process and from our side, we determine when to step away. And it is not a hard and fast move; it really depends on the site but mostly on the business. It is about making certain that when we step away the business does not fall flat. And our in-house IT team also helps a lot with that because they've got great knowledge of the business. So, we often use the same team to implement these projects from site to site, so we don't have a complete different team for the different regions that we are going to. That also helps. And we can also maybe find out at the third implementation that we are doing that our first project was not that great, then we go back to our first site or pilot site to do a revised upgrade" (Appendix B2:108).

v) The testing phase

RQ2: How can audit functions assist organisations in ERP project implementation?

This is the phase where the project team asks themselves if the system's functionality is aligned with the set requirements of the project. In this phase, auditors ensure that the project team is on the right track. An 'in-house audit' is done to ensure that the internal controls implemented mitigate the risks identified in the project. By the end of this phase, project team members will be comfortable in performing their tasks on the new system. This is the final step before 'diving into' the live system. P7 said:

> "We actually do our own in-house audit - we call it gap analysis - so that project, process, or system will then be added to our gap analysis audit that we will then do on every single one of our sites. We do that both as a corporate team, in other words our Operation Finance team, as well as our site finance function, take that role and go and make certain that all our risks are mitigated" (Appendix B2:111).

vi) The user training and maintenance phase

RQ2: How can audit functions assist organisations in ERP project implementation?

When the system is live, the focus of the project team moves to another level, which is the use of the system by the end users. As the system is being used, modifications and adjustments might be made to the system configuration if needed. Furthermore, post-quality checks and audits are performed to ensure that the system does not fail after implementation. P3 mentioned that "personally, from a point of view where I had a project in my department, I don't know how they were doing it in the previous years, but the last years, I know they do post quality check-ups" (Appendix B1:101). The importance of user training and maintenance resides in the fact that if the user fails to understand and use the system properly, it can lead to project failure. Dezdar (2017) indicates that user education and training, ERP user involvement, and ERP user characteristics are significant factors of ERP project success that help adopting companies realise the benefits of ERP implementation. For this case study, 'handholding' is performed after the implementation to ensure that the end users comprehend and use the system properly. P10 stated: "Also, after implementation, we always stay on site for a month end to make sure that they understand the new process, and we ensure that the system works 100% right and that everyone understands it before we hand it over to support" (Appendix B3:119).

5.2.6 Theme 6: Finance cost

The finance cost theme addresses RQ1.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

Financing ERP project implementation is an expensive investment to make. Companies who step into this investment place significant financial resources on the line (Babaei *et al*., 2015). Organisations need to realise the high cost of ERP implementation and assess whether they are ready for such a step (Kumar & Malik, 2011). In small to mid-sized companies, ERP implementation budgets approximately range from $M2 to $M4. On the other hand, for large organisations it can exceed $M100. Furthermore, after the implementation of ERP systems, some organisations gain many benefits and achieve a competitive advantage while others encounter costly failures (Abu-Shanab *et al*., 2015).

In the literature of ERP systems, it is recommended to choose cloud-based ERP instead of on-site ERP. According to Arora and Erturk (2017), cloud-based ERP implementation is less complex and more suitable for several reasons. The authors point out that cloud-based implementation is less costly to an organisation because it requires less maintenance and testing with the assistance of cloud vendors as well as less guidance from consultants and technical support, which saves time and money for the organisation (Arockiam *et al*., 2011). Furthermore, implementation is faster, lasting four to eight months in comparison with 12 to 36 months for an on-site installation (ENISA, 2012), and the business does not have to be concerned about hardware. Further research shows that organisations that have moved the majority of their systems to the cloud, have achieved an average 15 percent reduction in their IT spending (Arockiam *et al*., 2011). Moreover, cloud-based systems require less internal resources and therefore less from the Human Resources department (Arora & Erturk, 2017). For the case of this study, cloud-based ERP system implementation has not been discussed during the interviews. However, the cost of having external consultants (IAs and EAs) has been discussed. P6 mentioned that it is expensive to have IAs and EAs for project implementation: “Well, in that case they become quite costly so what we do is that we only involve them afterwards” (Appendix B2:111).

5.3 Summary of the RQ answers

From the themes discussion, the answers to the main research questions are presented below.

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

Based on this case study, in order to reduce the high risk of ERP implementation failure, the following points need to be taken into account:

i) **Audit the project:** Auditing is needed during all the project phases to ensure that the goals and objectives are met as the project evolves.

ii) **The Operation Finance department:** Their involvement spans from the beginning to the end of the project, in other words, from the planning to the post-implementation phase.

iii) **Consultations:** Ensure that consultations take place with the relevant stakeholders.

iv) **Human and technical skills:** Humans are crucial to compiling and motivating the project team and creating a working environment, while technical skills enhance the customisation and development of the project.

v) **The implementation process:** The project needs to be divided into the different phases for management purposes, and the right skills are required during the right phases.

vi) **Finance cost**: Ensure that the ERP system chosen is affordable and appropriate to the organisation to avoid unnecessary cost.

RQ2: How can audit functions assist organisations in ERP project implementation?

From this case study, audit functions can assist organisation in the following ways:

The Operation Finance department can perform the audit role and:

i) support the balancing of GL and TB and ensure that the processes are working properly;

ii) perform risk identification, design internal controls, and provide objectivity and assurance during the entire implementation process;

iii) complete an 'in-house audit' to ensure that the controls and processes implemented indeed mitigate the risks identified;

iv) carry out 'handholding' on site to ensure that the end user understands the new system implementation and uses it properly; and

v) audit the project throughout the implementation process by means of frequent meetings (INVOCOM) and service level agreements (SLAs).

The internal auditors can:

i) analyse the research conducted and the feasibility of the product to be implemented, and identify the risks linked to the project in order to develop controls that can mitigate these risks;
ii) be involved in the planning of the project to perform risk identification and the risk mitigation plan before designing internal controls; and
iii) perform risk assessment after project implementation to ensure the system works as it should and that all the risks associated with the system are mitigated.

The external auditors can:

i) analyse the research conducted and the feasibility of the product implemented;
ii) conduct research to ensure that the product selected has a good track record and give an opinion of a product, which is very important to the Board as they have a wider experiment on the product due their different clients; and
iii) provide guidelines in terms of rules, regulations, and methodology.

The aim to explore how audit functions can contribute to the implementation of ERP projects is addressed.

5.4 The proposed guideline

The guideline is a set of components that can support the ERP project and lead organisations to successful implementation. The guideline uses audit functions during the different phases of the project to assist organisations with implementing ERP systems.

i) The selection or planning phase

- Conduct research on the product selected to ensure it has a good track record, and give an opinion of the product
- Analyse the research conducted and the feasibility of the product implemented, and identify the risks linked to the project in order to develop controls that can mitigate these risks
- Perform the risk identification and the risk mitigation plan before designing internal controls

- Ensure that the project team includes all the stakeholders affected by the project (IT department, Operation Finance department, the customer, and external consultants; internal and external auditors, when needed)

ii) The design phase

- Provide guidance on the methodology, processes, practices, and compliance with law and regulations
- Perform risk identification, design internal controls, and provide objectivity

iii) The customisation or development phase

- Ensure that consultations take place with the customer to approve the work that will be performed by the IT department
- Support the balancing of GL and TB and ensure that the processes are working properly

iv) The implementation or deployment phase

- Audit the project throughout the implementation process by means of frequent meetings (INVOCOM) and service level agreements (SLAs)
- Ensure that end users are being trained to use the new system

v) The testing phase

- Complete an 'in-house audit' to ensure that the controls and processes implemented indeed mitigate the risks identified

vi) The user training and maintenance phase

- Carry out 'handholding' on site to ensure that the end user understands the new system implementation and uses it properly

The objective to propose a guideline that can improve the implementation processes of ERP projects is met.

5.5 The aim and objective

The aim of this study, namely to explore how audit functions can contribute to the implementation of ERP projects is addressed as we have discovered in many ways how the audit functions can play a role and to contribute to the success of ERP projects.

The objective, which is to propose a guideline that can improve the implementation process of ERP projects, is met. The findings and developed themes have led to the compilation of a list of important functions that auditors (OFD, IAs and EAs) perform during ERP project implementation. From these functions, a guideline for organisation implementing ERP systems is proposed.

5.6 Summary

This chapter discussed the different themes developed in Chapter Four. These themes represent the various factors to consider when implementing an ERP system as they can significantly influence the success of the project. Factors to consider for a successful ERP project include technical and human skills, the Operation Finance department, implementation processes, auditing the project, consultations, and finance cost. Furthermore, the research questions of this study are answered, the aim of the study is addressed, and a guideline based on the themes developed is proposed.

The next and final chapter presents the conclusions of the study, the recommendations to organisations who deal with ERP projects, the contribution of the study to the body ok knowledge, the limitations of the study, ideas for future research, and self-reflection by the researcher.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

Chapter Six presents the conclusions, recommendations, contribution, and limitations of the study. Future research ideas are presented. The chapter concludes with a self-reflection by the researcher.

6.1 Conclusions

It is concluded audit functions can play a role in the implementation of ERP projects that can improve the implementation processes and reduce the risk of implementation failures. The research shows that with audit functions as part of the implementation process, the risk of misalignment of the system with the company objectives is reduced as audits function ensure that the system is aligned with the organizations objectives.

In terms of Company X, the case study in this research, the company is a well-run company with a strong team work between the audit functions and the implementation processes of every project they do. Company X managed to optimise the working relationship between the audit and compliance function in terms of project management, information technology, and business processes. However, the company is in the process of buying international companies to expand their field of activities. This process adds to the complexity of the system, as they will face new rules, compliance, and law that need to be adapted. Furthermore, the fact that there is an audit gap at the macro level is a potential issue that needs more attention to avoid significant consequences.

6.2 Recommendations

Although the company is well run and best practices where applicable are applied, the following is recommended:

i) That the guideline presented in this research is followed.
ii) It is important that effort is made to uncover underlying tensions between departments, divisions and Head Office.
iii) That the auditors are not seen as a ‘must have’, but rather as support to improve the process.
iv) In terms of innovations where audit functions can be perceived as a bottleneck, it is recommended that the audit functions implemented in the system are flexible enough to allow innovation to happen easily.

v) It is highly recommended that the engagement of audit with business processes is introduced and adopted by other role players in the industry and related industries.

6.3 Contribution

The research followed a case study approach, limited to a specific organisation in South Africa that operates in the Fast-Moving Consumer Goods industry and delivers its production across Southern Africa, Eastern Africa, the United Kingdom, Europe, the Middle East, and China. The results are accurate and based on the 14 participants who participated in the interviews. However, these results cannot be universal as they are unique to this specific case study.

This research contributes to ERP implementation literature in terms of improving the implementation process and reducing the risk of failure. The research proposes a guideline that can be used by organisations that implement ERP systems. The role of the audit functions is highlighted and it is confirmed that audit functions play an important role to ensure the project is within budget, on time, and aligned with the organisation's goals and objectives.

6.4 Limitations

Because of limited funding and resources, including time, the study only addresses one company in South Africa. With the exciting new ventures in other countries of Africa, such as Mozambique, it would have been advantageous to conduct research there as well.

6.5 Future research

It is recommended that the research be extended to a broader group. It would be useful to research the law, compliance, policies, and procedures of the different entities in other countries and to compare how these factors will affect the South African results. Furthermore, the company's approach to research and development, innovation, and the relationship of innovation to the audit functions should be researched as it might contribute to the body of knowledge in terms of innovation and the audit function.

6.6 Self-reflection

Doing this research has been an interesting, exciting, and long journey. I faced many challenges, frustrations, fears, and self-doubt, but today I can say it made me better, stronger, and more confident in terms of my writing. I also discovered new talents about myself that I did not know before and I am so glad I embarked on this journey. I remember

asking myself how I would be able to write a thesis and read so many articles knowing that I was not a great fan of reading and I had a lack of confidence in terms of my writing! However, today I am so proud when I see the results. Thank you to my supervisor who has been extremely supportive and encouraging throughout the entire process.

The organisation where the interviews were performed is an excellent company. Working with the people from different departments and divisions was an exciting experiment. It was a privilege to explore different opinions on the same questions from people ranging from the Chief Information Officer to the Operational Process Controller. All the interviewees were available for the interviews as scheduled and they all answered to the best of their knowledge.

In the end, I would have preferred to conduct more interviews with more employees from different divisions in South Africa and with the company's new African ventures. Money and time however prevented this from being realised.

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APPENDIX A: INTERVIEW GUIDE TEMPLATE

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

IQ 1.1.1: Is there a lack of audit and internal controls in your organisational structure?

IQ 1.1.2: Are there any challenges when considering auditing functionality during the project? If yes, please specify.

IQ 1.1.3: Is the project team only composed of IT specialists?
If yes, why?
If no, why not?

SRQ 1.2: What audit functions are needed when implementing an ERP system?

IQ 1.2.1: What is your opinion of the importance and contributions of auditors and their functions during the implementation process?

IQ 1.2.2: Are there any consultations with the auditors when implementing the ERP system?
If yes, why?
If no, why not?

IQ 1.2.3: What are the audit functions that you deploy during the implementation process of the ERP system?

RQ2: How can audit functions assist organisations in ERP project implementation?

SRQ 2.1: How do organisations use the audit functions of the implemented ERP system?

IQ 2.1.1: If there are no auditors involved, how do you audit the implementation process? Is there always an auditor involved?

IQ 2.1.2: If there are auditors involved during the implementation, how do you manage the audit process?

IQ 2.1.3: How involved are the auditors in the implementation process of the ERP system?

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

IQ 2.2.1: What are the benefits that auditors bring when they are involved in the implementation process?

IQ 2.2.2: What are the disadvantages when auditors are part of the implementation team?

IQ 2.2.3: How can your organisation benefit when introducing auditors to the implementation team?

APPENDIX B1: GROUP INTERVIEW 1

Researcher: Do you mind if we record the conversation?

P1, P2, P3, P4: No we don't mind.

Researcher: Please introduce yourselves and tell us your position and how long you have been working with the company.

Participant 1: [Name], Operation Finance, 7 years with the company, and overall 14 years.

Participant 2: [Name], Group Credit Manager, collecting the money, 18 years with the company.

Participant 3: [Name], Corporate Finance, management accounting 8 years with the company, overall 13 years.

Participant 4: [Name], Tax Adviser, 25 years with the company.

BRIEF SUMMARY OF RESEARCH

Researcher: The title of our project is the role of audit functions in the ERP projects. We are trying to see how our audit functions can improve the ERP implementation projects.

Participant 3: Is it only implementing a new system or is it monitoring, running day-to-day basis?

Supervisor: Yes, it will fall into the department called CIP that you have.

QUESTIONNAIRE

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

IQ 1.1.1: Is there a lack of audit and internal controls in your organisational structure?

Participant 4: I do not think so. I think we have fair procedures, but obviously in a business, we have a lot of changes in the way we do things. And as soon as something comes up, we will investigate and maybe change what the internal controls are to correct any perceived error that we see.

Participant 3: In terms of this, I think it also changes as the company grows. For instance, in the company, we had an Internal Audit department and as the company evolved, we dissolve and outsourced the audit functions which changed again. I do not think that there is a lack of audit or audit functions, but changes yes, as the company and requirements change.

Participant 1: In terms of controls, we have standard operational procedures in place, so that is like the rules we need to follow in different departments, which is part of the controls. As Participant 3 and 4 said, there are inherent risks to any business, so we can never mitigate all those risks but it must be at an acceptable level, and I think we are at that stage with all the controls we have in place and the people we are looking at from a control point of view. I think there is no lack of audit functions in our business. It is such a big business and there so many people focusing on the controls, and the audit that is taking place yearly, monthly, weekly. So there are numerous audits taking place from different points of view, internal, external audit and corporate. The head office is very visible at the sites. So, we do a lot of site visits and reviews.

Participant 2: No, I do not believe that there is a lack. I agree with the rest of them. As soon as we see something that needs to be adjusted, we accordingly adjust our standards and operating procedures.

Participant 4: What is important is that our audit controls in on the existing business. And as we start a new business or now we are doing a bit of export drive for instance Kenya, we are going to start trading in Kenya very soon. Obviously, there is new legislation; there are new ways of doing business. All that, as soon as we understand the new operations around it, I am sure the audit functions will fit in to test. For instance, [name] talking about Mozambique, the debtors there have completely different criteria to trade in there. So as soon as there is new business, the audit functions will change to do the necessary audit on that business.

IQ 1.1.1.1: Why did you have to outsource the audit functions?

Participant 3: I have not in-depth knowledge of it but one of main thing was in terms of cost. It was less expensive to have an outsource than to have a whole internal audit department.

IQ 1.1.2: Are there any challenges when considering auditing functionality during the project? If yes, please specify.

Participant 4: Yes, especially if we deal with new countries, obviously, there are different tax laws, but what we will do is that we will make use of outside parties. So for instance, let us say it is a specific VAT question in Mozambique, we will do our research, we will come to the way

we see it but we will check with specialists on that specific legislation. We will mostly accept what the auditor says.

Participant 3: Change is always difficult. Management change is quite a big thing in terms of new and old controls because you need to get the *buy-in* from the people. Especially if you got a new acquisition, to actually conform to our internal controls. It is always difficult. We have seen it in our acquisitions for the last three to four years. The other thing in terms of lack of internal controls is that we did have some lack before when we did not review some controls. And I think the last two or three years there was a big drive in terms of updating all our internal controls and standards operating procedures. And because of that as well, management had put in our scorecards as well to focus on internal controls and making sure that the audit function is there.

IQ 1.1.2.1: You mentioned earlier that if there is something that you discover that is changing or wrong, you fix, and you called it an acceptable level of risk. How many such cases do you experience in a year?

Participant 1: I think it is on-going; you don't keep count of things that change in the business because there are so many minor changes and you cannot put controls for every single change or every single risk. It is just impossible. From a change point of view, there is a lot of communication between lots of experts from our side because we have a lot of people that's got 20 to 30 years of experience in the business environment, therefore the same risk applies. There are certain risks that we keep track of such as the top 10 and they look and see what they can put in place to mitigate or to lower those risks from a Board point of view. But in terms of small changes, when smaller changes happen, it depends on what the change is. If the change is a big risk then we will put certain control on it. But we don't keep track of it.

Participant 3: In terms of that, there are two facts that usually will influence the amount of change in terms of the ERP system every time there are updates and changes. We have different divisions on different versions of the ERP system. For instance, bakery is on GP 2010, groceries and candy is on GP 2016 now. So there is constantly changes in the versions and updates and correct any differences or changes in the operating system if there is any gap. The other fact is that, you heard we have a CIP department and staff and a lot of focus has been put on innovations, continuous improvement and there is a lot changes happening the whole time from that as well. We are constantly seeking to improve our system, making it more streamlines and efficient, making sure that all the controls is there to mitigate any risks.

IQ 1.1.2.2: You have mentioned that there are about four ERPs running.

Participant 3: Not different system, just different version.

IQ 1.1.2.3: How does that affect the audit of the system and all the business?

Participant 3: It would not necessary affect the audit that much. However, there are some challenges to actually consolidate information because of these different versions. But in essence, for instance, if we are checking certain figures or general ledgers (GL) accounts from a finance department, the principle to pull the GL listing is pretty much the same in all the different versions. So trying to check and monitor controls from a finance point of view is not that much different from different versions. However, if you look at certain processes where they would have process invoices or purchase orders (PO), the process might be from different versions.

IQ 1.1.2.4: In terms of fraud or misuse of the business processes, for instance in the bakery, do you have specific procedures to control the use of ingredients such as flour, maize, and so on?

Participant 1: There are numerous procedures. You have so many checks and balances from the moment you start using the raw material product straight to when you load the finished product on the truck to be moved to the stores. You've got daily, weekly and monthly stockage, you've got certain products that you need to weigh every 10 minutes, you need to weight the bread, the loaf, to see if the dough is at a specific level of weight because if it's too low, the bread is going to be under 700g which is CPA (Consumer Protection Act) requirement. You can't sale under what you are marketing, it is false advertising. So that's with every product. So we've got many checks and balances in place form a financial point of view and also from a risk point of view. When for instance the loaf grams is lower that 700g, we have to discard the product because when the bread gets to PnP, he will discard the whole shipment if the first three breads he weights are below 700g. And that's a big risk because we are losing money. From a sales point of view, the cost incurred to deliver the shipment will then be wasted because we are not going to be paid for any loss. And also from a delivery point of view, we've got agreement with our formal customers (PnP, Shoprite, etc.) on a 95% delivery, so if they discard a delivery, it affects the service delivery percentage with leads to penalties at the end that we need to pay them, and our reputation, and our brand. So, it's the whole value chain process that is affected. So we have numerous checks and balances in between and that excludes the quality point of view. We've got people on site that are doing quality checks to ensure that the product is at the right temperature and the quality is acceptable because we don't want to put inferior products in the market. From a foreign object point of view as well, we do not want a slice of blade to be in the loaf because we will get consumer complaints, which will cost us money again. So that's why we've got all those checks and balances in place. Our QCs

(Quality Controllers) make sure that from a food point of view, our project runs well because the reputation is very important to us and once you have lost your reputation, it is very difficult to get it back. From a fraud point of view, if we pick up that there is fraud, obviously we will escalate and there will be actions taken.

IQ 1.1.2.5: Do these checks and balances sit within the ERP system and fit into the audit functions?

Participant 1: well, not all of them are sitting within the ERP system itself. Some of it is outside the system that you manually do. So you count the stock manually and you check on an Excel sheet the opening and closing balances. That will integrate the system after you process your transaction. Then it will reflect in the ERP, but from start to finish, not everything will reflect on the ERP system. And from there if you can see, let's say your stock losses in for your small bakery is R1 million, that's going to be a big risk because your small bakery shouldn't lose a R1 million of stock, which will then lead to a risk to the audit functions.

IQ 1.1.2.6: Are there any challenges when considering adding audit functionalities in the ERP projects?

Participant 3: I think there are some challenges. One will be time. As you are all busy with the project, you've got certain deadlines and things that need to be done at a certain time and the audit functions is always going to impact on time because you need time to actually check stuff as well and give whomever is doing the audit function as well.

IQ 1.1.2.7: What about tax? What is the main challenge going through tax processes?

Participant 4: I am not sure but I think you know of INVOCOM, they are made of a new system that we will pull the information from LGO. I think the main challenge is to really get to the detail that is required from the tax return, and that takes a lot of time to do. Let us say for instance that SARS needs the details of legal expenses for instance and there is pages and pages of transactions that you have to analyse every one of them, Participant 3 usually help me with that to till down to the exact, almost to the invoice of the lawyers to find what it is. We are trying to educate these lawyers to not just give us an invoice that says professional fees.

Participant 2: In terms of the debtors' point of view, we even just look at the whole [company name] processes; you must remember that we have millions of transactions going through so that always remains a challenge. Let's just use one example of Shoprite, Checkers. They have like 600 stores and we deliver to every single store, every day, a loaf of bread. When I say loaf, meaning an invoice. So there is at least 600 transactions going through in one account. The bread is so fast moving. And your shift is a day/night shift, you cannot deliver

for a week. In essence, of just our transactions, the volume makes it a challenge. And that's just on the bread side, not even on the other grocery products that we have.

IQ 1.1.2.8: How do you deal with your debtors? Do you go to the transaction and check everything before you send them a statement?

Participant 2: We give them a statement that says this is what we have delivered. They will obviously put claims in it and send it back to us on a daily basis. But not all our customers will operate that way because each one of them has its own processes and procedures in place. Shoprite and Checkers for instance will not pay you if there is an error on the invoice. So let us say there is a short delivery due to damage or if there is a pricing issue. They will immediately park your invoice until they get the credit note, which is normally paid in 60 days. So we pass the credit note to them and they will then match the two, their system is automatic. Where PnP, as soon as there is a variance in the invoice, it is a manual process to get that invoice match, so there is manual intervention. So it's impossible for us to check every single invoice. So what happens is that the drivers come in in the afternoon and they reconcile their van. It might be cash sales. If they are honest, which is a risk on its own, they give us their claims and invoices, and yes, automatically we will pass the credit for the difference of what was not delivered. But in terms of a pricing issue, we are not going to know.

IQ 1.1.2.9: Is there a trust relationship between supplier and customer?

Participant 2: Absolutely!

Participant 3: I think in terms of challenges, it's pretty much time first of all; second is the shift volume when it comes to reconciling and checking auditing functions. If you look at our data reconciliations, just to reconcile, we cannot put our GL listing for more than month period in an Excel sheet because the share lines are too much.

IQ 1.1.2.10: Do you reconcile on an Excel spreadsheet?

Participant 3: Some of the stuff we do on an Excel sheet, other stuff we ask the IT team to help with reports to clear up some of the stuff so we can actually get to reconcile.

IQ 1.1.2.11: Who populates the Excel sheet?

Participant 3: We will pull a GL listing and then export it to Excel ourselves, and sometimes we will ask IT to obviously assist.

Supervisor: So that is not a human sitting there and making mistakes.

Participant 3: No, the GL listing will come directly from the ERP system. And the third challenge will be in finding the information like we mentioned earlier in the tax process. When we review tax stuff, it is always a challenge to get to create the information or enough to assess whether the calculation is correct or needs to be changed.

IQ 1.1.3: Is the project team only composed of IT specialists? If yes, why? If no, why not?

Participant 3: No, it should never be only IT. We try to involve all the departments that need to be involved. For instance, any type of bakery project where we make changes in the ERP system, we will include the financial guys, involve the actual operational guys on site as well. And even maybe if you get to a more technical point where you will get the technical guys from the mailing side also to get involved and check that the ERP is producing the information that is needed.

IQ 1.1.3.1: Is that a culture, a leadership style?

Participant 3: I think there is a lot of drive in terms of one of our values, which is "growing together, being the best, and making diversity strength". So there is a lot of drive in terms of management to ensure that we involve the right people with the right skills and knowledge to improve and make the project a success.

Participant 1: I think it is imperative that everybody is involved. Because if it is only a specific department like IT rolling out the system, because the business is fast moving, it's going to take weeks to fix and we cannot lose a week in terms of productivity from a system point of view. They are certain things that come from the project for instance do the debtors need the systems to do something specific and so on. That why we need to involve the right people that will be impacted by the project.

IQ 1.1.3.2: Does IT do a quality check after implementation of the system?

Participant 3: Personally, from a point of view where I had a project in my department, I don't know how they were doing it in the previous years, but the last years, I know they do post quality check-ups.

Participant 4: I think as my colleagues mentioned earlier, it is important that other divisions are also involved, because it is impossible just for IT in isolation to write any changes in the system. Especially finance, I think those two need to work closely together. Obviously, if it is a specific project such as payroll for HR, then they need to sit with that division as well.

SRQ 1.2: What audit functions are needed when implementing an ERP system?

IQ 1.2.1: What is your opinion of the importance and contributions of auditors and their functions during the implementation process?

Participant 3: I think it's quite important that auditors get involved. Not necessarily external auditors but the internal team as well when implementing processes. Because, they can document the processes, mention what happen and did not happen, and you can learn form that to improve the next process. They can ensure that the quality is there and that you are doing it correctly. They can point out an issue and correct it before you actually implement it and saves you time from correcting it after implementation is done.

Participant 4: I think participant 3 summarised it perfectly. It is very important to have auditors during the implementation process because they pick up potential errors during the implementation phase, and we will save time and money in correcting them early, as changes are very costly if you are already "live".

Participant 4: Which auditors are you referring to? Internal or external auditors?

IQ 1.2.1.1: Can you explain why you are asking the question please?

Participant 4: Personally, I don't know what our internal auditors' functions are. So I would imagine that they will be more involved in our day-to-day with new systems than the external auditors.

Supervisor: I would be surprised if the external auditors are heavily involved.

Participant 3: In terms of the external auditors, we will not necessarily have them involved in any way except if we do a new great plan and implementation where we actually have to ensure that there is certain external requirement and to make sure that it actually complies with for reporting purposes. However, internal auditors again are outsourced, so currently, we won't involve them too much but we will use them in certain circumstances. We have previously used them when we reviewed our SAP for bakery and mailings. We actually involve them for Best Practices (BP). And then I think in terms of auditors, I see it as just more than internal or external. Any person or employee in the company can be an auditor. If you review, check, or monitor anything, you are also auditing. KPMG is our external auditor and PWC is our internal auditor.

Participant 4: On our ERP system, is there a tick box for the auditors or is it a requirement for auditors to review any project or rather support participant 3 to say that any employees almost play a the role of an auditor? Because your question is specifically pointing towards the auditors and I am not sure if they sign off or if they actually go any new system with a scope in mind.

Participant 3: I think there is no tick box, but I do understand as if they will document in the implementation the project documentation that KPMG or PWC, whoever, would review and must probably get sign off. I know when we did the SAP with PWC, they actually sign off.

RQ2: How can audit functions assist organisations in ERP project implementation?

SRQ 2.1: How do organisations use the audit functions of the implemented ERP system?

IQ 2.1.1: If there are no auditors involved, how do you audit the implementation process? Is there always an auditor involved?

Participant 1: I think like Participant 3 said earlier, it is not just external or internal auditors. Let us use an example. If we are buying a new business like the Kenya business for instance, it won't just be the IT team that will fly to Kenya to implement the system. You will have people from Finance to assist with the checks and balances from a control point of view, the stock takes, the opening on the system because without a product, invoices cannot be sent to customers. So there are certain processes that we need to follow from information that we need so the product goes to the end customer. So not just from an IT point of view but a master data point of view as well, as we have a Master Data department, they open all the classes, categories, number codes, the pricing which is very important. So they are people who will do numerous checking as if they are auditors so that the process is correct and goes to the customer with the right price on, quantity, delivery address from a legal point of view. So in other words, people with different experiences will do checks and balances as if they are auditors to make sure that their portion of the value change is successful.

Participant 3: I think in terms of this, auditors are not always involved. It will depend on how material the project is. If it is a small project, it is not worth the cost to have external or internal auditors involved. So, obviously, they will have a manager that will sign it off for review. So it all depends on the size and the risks involved in the project. For question 2.1.2, "If there are no auditors involved in the process, how do you manage the audit process during implementation?" We have SLAs in place between departments to be able to measure and monitor the process implementation and performance on it.

IQ 2.1.1.1: How do you manage that?

Participant 3: For instance, just on our side, us and the legal team have a SLA, we invite them to our monthly INVOCOM and go quickly through the SLA processes and what we require from it. But even more than that, we do have a specific INVOCOM for legal; we sit and we go

through all the processes, what we require from them and what they require form us to maybe able to streamline it. Especially with new acquisition for instance, from a financial point of view, we need to have the legal staff in place. We need to know that property has been transferred, that the shares are transferred. So, all those are being monitored and checked by that SLA.

IQ 2.1.1.2: What is the internal penalty if not being met?

Participant 3: In terms of that, it is filtered through your scorecard. I cannot speak in terms of what the legal guys' scorecards look like and if it actually does filter trough but in my understanding of it, it should filter through their scorecards and they should then be penalised personally.

Participant 2: I even believe that a lot of business is changing towards SLAs. We always have SLAs but it was never documented. It was more like, I have to do something in a certain time period, but there is a lot of focus on implementing more SLAs, in terms of filter down to the scorecards and to ensure that things are more streamlined.

Supervisor: It is actually interesting to see that there is quite a management around SLA because other companies do not see SLAs as an audit function.

Participant 3: Like participant 2 said, previously we did not have that focus but in the last two years, it has actually been a big focus from management again. And that filters into our INVOCOM methodology, it is on the guys' scorecards to ensure that there is communication between the departments on time.

Participant 2: It is a cross-functional agreement between departments. INVOCOM is meeting around the different business processes. Some departments have morning [meetings], some once a week. As a corporate finance [member], I have it once a month and it's you and your team and having cross-functional team members to discuss your goals and obstacles that you are facing to reach your goals, and that's why we discuss the SLAs in those INVOCOM meetings and all these things obviously filter on your scorecard.

IQ 2.1.1.3: Is it a new approach?

Participant 2: No, it has been around for a very long time but there have been a lot more focused on it for the last five years.

IQ 2.1.1.3: What is the end result?

Participant 2: We are very performance-driven; the pioneer culture is very performance-driven and the only way we can monitor our performances and the obstacles that we have, is by having

these INVOCOM meetings and I think all of us believe that there is a positive side of having INVOCOM. It forces people to discuss the issues they are having with one another.

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

IQ 2.2.2: What are the disadvantages when auditors are part of the implementation team?

Participant 4: It might take longer to implement because as we add another function, obviously there is a time factor, but the advantages overshadow the disadvantages.

Participant 3: Some of the auditors are too theoretical, so what happens is that they want this and this. However, it is not always practical and cost-effective and it is clashing with operations. Auditors recommend controls that are most of the time the best theoretically but in operation, it takes away certain efficiency. So, it takes longer to bake and the longer you bake, the less output you have and the less you can sell.

Participant 1: Because we are referring to the implementation of ERP systems, that does not happen every month or every year. It happens once in three, five, or ten years now for external consultants or auditors coming to our business to understand how our business works. From a system description point of view like participant 4 said, it is going to take them much longer to understand our business, especially if it is new people every five years because that's how external consultants work, they don't have people for 20, 30 years with experience. So from a time point of view, there will be a lot on the job training for external consultants to understand our business before we can actually get down to what are the real risks and opportunities in the ERP system. And time is obviously money with external consultants but there is benefit as well in having them.

IQ 2.2.2.1: Does the clash affect the objectives of the company?

Participant 3: There is always going to be clashes between auditors and operations and I think that is where management needs to give direction to ensure that the two departments work towards the objectives of the company.

IQ 2.2.2.2: How do you see the audit functions, governance functions, ERP system, and innovations going together?

Participant 1: Innovations are all about being the first to do it. There is a certain limitation when it comes to innovations from a governance point of view because there are rules that you must comply with, and from an ERP system point of view because you cannot just make on ERP overnights for the innovation to turn into a reality.

Participant 2: One of the reasons why we haven't been innovative in our GP by changing the version is because such implementation requires the bakery to shut down for a week and we cannot just do it for an implementation like that.

IQ 2.2.2.3: Is the old version of GP affecting the business?

Participant 1: The end result is showing and that is what the consumer and the public see. But there is a lot happening behind the scenes where you want minimal disruption issues that you do not always achieve. But it is how you fix the disruption in a short period of time that will affect the business, because the ultimate goal is to deliver the product on time.

Participant 3: In terms of innovations technology itself, it is not just a big project. It can also be just enhancing, so a small project. For instance where we change certain processes to make it quicker in time. That is also continuous innovations for us. Therefore, I would say that our continuous innovations add value in terms of our controls, timing, efficiency, and compliance.

IQ 2.2.2.4: Do you think that you have an audit governance culture in a positive way?

Participant 1: We are being audited so much and on so many aspects that it is not new to us. It is part of our culture to be audited. From a tax point of view, we have numerous tax audits that are happening at different times of the year and it is nothing new to us. There are certain things that we do so we are prepared by the time we get to a full safety audit or internal and external audit. So it is definitely making us aware of what is coming and what to look out for in terms of what they are going to request from so that we are prepared.

Participant 2: There is definitely that culture of being audited and wanting to be audited because we continuously review our processes on a corporate level, whether it's on daily, weekly or yearly basis. We are continuously having our own auditing processes to make it easier for the internal or external auditors when they come.

IQ 2.2.2.5: So you don't see it as a matter of necessarily evil?

Participant 2: No we don't, it's a benefit.

Participant 3: We actually see the value in the audit because it is not just an external audit signing off our financials, but it is actually to show us some weaknesses, issues, stuff we are doing wrong to do it right.

Participant 1: It is also to test us in terms of achievements because it is a big challenge to have a good audit report. So for us to have a clear audit report is an achievement.

IQ 2.2.2.6: What is your nightmare in terms of your division department?

Participant 1: In terms of problems, there not necessarily something. But it is more how to add value efficiently from a quality point of view.

Participant 2: Besides having bad debts, I would say in terms of my staff having to work on a system that is not always error free. We continuously have to clean up batches and because of the volume of transactions it can be demotivating for my staff as they have to meet deadlines. The staff want to produce a quality job but if they are battling with time because they also have to clean up the batches with mistakes, it demotivates them.

Participant 3: From a finance point of view, cash flow is the biggest challenge because we need the cash to purchase new acquisitions for instance, but because we do not have the available cash we cannot or we have to take it somewhere else, which affects other accounts such as wages.

Participant 4: From a tax perspective, it is more diligence on tax matters for our new acquisitions.

Researcher: Thank you for your time.

APPENDIX B2: GROUP INTERVIEW 2

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

IQ 1.1.1: Is there a lack of audit and internal controls in your organisational structure?

Participant 7: I think that [the company] has quite good internal controls with both an in-house audit team as well as true in-house external parties in PWC assisting us. I think as any organisations, we have room for improvements, as there are always things that we learn, as the business is moving all the time. So we always have to ask those risk mitigation questions, do our current controls mitigate our risks the way the business evolves?

Participant 6: And we, because we are working with a lot of people coming from different backgrounds, there is always something coming up even when we think that we have mitigated all the risks. Like participant 3 said, there is always room for improvement and it is an on-going process.

Participant 8: With regard to our controls, we update them regularly. Where we see that there is a risk or that it is not detailed enough, we look at the processes from all angles and we update it.

IQ 1.1.2: Are there any challenges when considering auditing functionality during the project? If yes, please specify.

Participant 6: Yes we do. For instance 2 years ago, when we did an implementation in one of our site, we had problems like languages, computer literacy, commitment, understanding the importance of things and obviously system issues and just general cooperation.

Participant 5: I think also with any system or any sort of change that you want to bring in that organisation, the buy-in, and trying to get people to cooperate is always a problem at the beginning. Especially if it is a new system where people were used to do things the old way.

Participant 8: I concur with participant 1, it is like resistance. Sometimes when we purchase a new company, and we want to change and streamline things for better processes in place. And that is where you tend to have resistance and it takes longer to implement.

Participant 7: To add to that, identify all your project risks from a project scope perspective can also be a challenge. And only when you start implementing, you realise that some of the scoping needed to be a little wider to address all the issues. That's an on-going change you make in the project and how you fix that can and do like a revised scoping can be very challenging.

IQ 1.1.2.1: How do you adjust the changes in the scope and project?

Participant 7: We do a lot of handholding through the whole process. So, we don't just implement a system on a site and leave people on their own. We have a lot of people helping them until that site is completely familiar. Sometimes it takes a lot of time but we do handholding through the whole process and from our side, we determine when to step away. And it is not a hard and fast move; it really depends on the site but mostly on the business. It is about making certain that when we step away the business does not fall flat. And our in-house IT team also helps a lot with that because they've got great knowledge of the business. So, we often use the same team to implement these projects from site to site, so we don't have a complete different team for the different regions that we are going to. That also helps. And we can also maybe find out at the third implementation that we are doing that our first project was not that great, then we go back to our first site or pilot site to do a revised upgrade.

Participant 8: We also try not to go hard and fast at implementing every single thing at the same time. We try to scope each stage at a time, see if works and then move to next stage. It also helps avoiding the resistance as users can see that the project is working well, therefore the next stage might be better for us as well.

IQ 1.1.2.2: Did you ever have some project failure due to resistance or lack of following protocol in place?

Participant 8: Yes, we did experience some failure before. For instance, 4years ago, with a new acquisition, we failed implementing our own processes and therefore decided to keep the acquisition old processes. And two years after that we realised that it was not working for us and we decided to implement our own in-house processes because we know that that works. The old culture of the new acquisition can also be a challenge at some stages.

IQ 1.1.2.3: You mentioned that general cooperation can be a challenge and that on site people tend to see head office people as seagulls. Why?

Participant 6: But I think the intervention we had lately is a lot of training and coaching in terms of the journey we have embarked on which is called the 'company way', just to get us all

synchronised to the same culture. And I think it had a positive effect in terms of alignment and ensuring where each one fits into this big puzzle. And that is help in terms of changing the culture and how we view things. Alongside that, there have been some performances measurements like we now have what we call scorecards to ensure accountability for your performance and things like that. And INVOCOM to ensure and improve communication. So all those interventions have had such a positive impact in terms of changing the culture and how it is perceived and ensuring that the implementation and changes then are received a lot more positively.

IQ 1.1.2.4: How do you know it is positive?

Participant 6: Because from my job perspective, we work so much on-site and we work with people quite a lot and we are part of the scoping of scorecard and performance reviews. So you can see if for instance you look at a scorecard from 2 years ago to where we are now, you can already see the improvement and the level of engagement. And when you go to the internal audit side of the site because we also score the sites, that we are sitting at 80% and we are more likely at 90% in terms of compliance conformance and all those kind of things. And they are beginning to understand and adapt to the business as they know why we need to do certain things.

IQ 1.1.2.5: How does your scorecard align with the GP (the ERP system)?

Participant 6: I think from the GP perspective, it is more on the processes. Because for instance you will have standard operating processes being a measurement, how aligned are you? And it is very specific on the scorecards that you need to achieve a certain percentage or above.

IQ 1.1.3: Is the project team only composed of IT specialists? If yes, why? If no, why not?

Participant 7: In part of our project rollout, we don't just have IT specialists, we also have business specialists. So depending on what part of the business we are touching, IT project plan and project scoping will include this business specialist in order to make certain that the system that is chosen is designed according to their requirements as well.

SRQ 1.2: What audit functions are needed when implementing an ERP system?

IQ 1.2.1: What is your opinion of the importance and contributions of auditors and their functions during the implementation process?

Participant 8: We do not have the auditors as part of the team but we are doing the SOP rollout and the processes; that is, when the audit functions come in because what is being audited actually is happening in the system.

Participant 5: With regard to the implementation of ERP, the auditors generally won't be involved. And then after it is implemented, to see if it is working, and to assist if the system mitigates and covers all the risks associated with the system that is being implemented. And then you can do a risks assessment afterwards, but not during the implementation.

IQ 1.2.1.1: Are these internal and external auditors?

Participant 5: Yes.

Participant 7: Obviously, you keep your audit head on, so what I mean by that is that you continue to ask yourself through the whole implementation scoping and project plan what are the risks? And whether the current controls or the planned controls will mitigate those risks. But we as business specialists ask that; we don't get our external or internal auditors to answer those questions for us.

Participant 6: In my opinion, I do not think auditors should be involved in the implementation processes. It can sometimes compromise independence.

IQ 1.2.1.2: How?

Participant 6: Because if you are part of the implementation, you already have preconceived ideas of how you would want it to work rather than come in with a fresh set of eyes and see is it working the best it should.

Participant 7: I agree. If you have them in the implementation, how do they say later objectively that the system is mitigating all the risks because they were part of that plan? Especially if it is exactly the same person that is coming. If you have the same firm but different individuals, it could maybe work then.

IQ 1.2.1.3: And what if you have for instance internal auditors in the project and external auditors to assess the project afterwards, do you think it can work like that?

Participant 6: Well, in that case they become quite costly so what we do is that we only involve them afterwards.

Participant 5: I agree with what everyone has said in the sense of objectivity because if you involve the auditors throughout the project from beginning to the end, they also become part of the

project; so it could affect in the long run how they feel about the project and the controls. But then, if you have different groups of people like participant 3 pointed out then that is fine.

IQ 1.2.1.4: Then if you say that, then it becomes wiser to have at least one auditor in the team to look at where the control is logical.

Participant 7: Remember that from a finance perspective we have quite a lot of background as a norm, and risk management as well. And with that in place, it is sometimes easier to use us as almost the expertise in those areas.

RQ2: How can audit functions assist organisations in ERP project implementation?

SRQ 2.1: How do organisations use the audit functions of the implemented ERP system?

IQ 2.1.1: If there are no auditors involved, how do you audit the implementation process? Is there always an auditor involved?

Participant 7: We do it two ways: one way is that we actually do our own in-house audit - we call it gap analysis - so that project, process, or system will then be added to our gap analysis audit that we will then do on every single one of our sites. We do that both as a corporate team, in other words our Operation Finance team, as well as our site finance function, take that role and go and make certain that all our risks are mitigated. Additionally to that, we bring external parties (external and internal audit) to perform an internal audit on a 3-year cycle and that new project will be covered in those audits. Should we decide as a business that this particular project was challenging or difficult, we have brought internal auditors previously to see if there are any risks that need to be mitigated.

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

IQ 2.2.2: What are the disadvantages when auditors are part of the implementation team?

Participant 7: Beside the independence being compromised, the external auditors or audit firms do not always have deep knowledge about our business, so they might recommend controls that we know are not going to work.

Participant 6: There is also a costly element. It is more costly to the business to have external or internal auditors in the projects.

IQ 2.2.2.1: How do you manage when they recommend controls that you know is not going to work?

Participant 7: Remember that from a business perspective, we have two choices when a finding is made, don't we? **1)** Implement the control to mitigate the risk or address the finding. **2)** Acknowledge the risk and accept to take that. I think it should be a partnership between every audit department and the business that it is about what is good for the business. So it must fit the business pocket and it must mitigate the risk. Some controls in the auditor's view might not the best control but it is the closest that we can get to address the risk.

IQ 2.2.2.2: Why did you choose to outsource your internal auditors instead of having your in-house internal auditors?

Participant 7: I would say it is a business decision. It is also about a fresh set eyes, making sure that we got an independent opinion. External auditors also bring the expertise because they work with many others businesses and maybe they have learnt the partnership bring that to the business, and I believe that is the benefit external parties bring to our business.

IQ 2.2.2.3: Do you think that having internal auditors in the project implementation can be a benefit?

Participant 7: it can be a benefit but it has to be a senior auditor to be part of that organisation, because one to three years auditors do not necessarily have enough experience to be able to add value.

Participant 8: They also need understand our business in order to give us that benefit.

Participant 7: I also think in my view that auditors do not have extensive ERP knowledge before they start doing audits at different firms. So in our particular instance with the program that we are running, there are very few organisations within South Africa that run this ERP system. So I am not sure we have enough local expertise to be able to draw on that.

IQ 2.2.2.4: How tight are the different organisational functions integrated? For instance, how tight is the tax implemented with ERP, with HR, with the sites, off-sites? Are you getting one view of information or is it a different kind of thing?

Participant 8: Not in all instances and that is a fact.

Participant 7: I think it is quite integrated and we have a consolidated view of the system. Yes, not everyone has access to Payroll or HR or whatever the case might be, but it is becoming a lot more integrated than we used to have in the past.

Participant 5: It is integrated to as much as it can be. I don't know what I would change at this point of time. The system itself is okay. I don't know if the participant 4 answer is more when you start involving the human part of it. I don't think it's on the actual system.

Participant 6: My view is more like participant 3 said – there is always room for improvement. In my experience, especially when we look at the volume of transactions from the bakery division, we are at the point where the system drops volumes of transactions that we now have to pick up manually with Excel spreadsheets to fix things and we constantly have to manually reconcile things. For years and years, there are certain sub-ledgers I am still trying to reconcile and still do not talk to the general ledger. So my personal view, we are not there yet. In certain instances, our system is not even coping with certain basic principles in accounting like sub-ledgers and ledgers that need to balance but they don't. However, there is an improvement needed there to resolve such issues. So in the meanwhile, we just have to reconcile it manually.

IQ 2.2.2.5: Is the system always online?

Participant 5: We do have offline situations like with any system but the IT department is always on top of things to ensure support and reduce the interruptions as much as they can.

IQ 2.2.2.6: Do you think that the governance that you are following helps or is a stumbling block for innovations?

Participant 5: I don't think it is a stumbling block for innovation. Yes, we do have written procedures that every department needs to follow and comply with but none of our SOPs is set in stone. If there is an innovation, we incorporate it in the system.

Participant 7: Audit does not drop our business. When we look at innovation or any kind of acquisition, audit does not come into our mind. It's not a stumbling block, it is a requirement. And I think our business has shown great aptitude for innovation if you check what we do.

IQ 2.2.2.7: Do you think the culture of the company embraces the audit and governance function, or do people see it as necessary evil?

Participant 5: Yes, the company embraces the audit and governance functions and my position in the company is an example of that. I work a lot on auditing, whatever, our company, SOPs, etc. Just having a person of myself working full time in house, shows that the company culture embraces the audit procedures and governance.

Participant 7: The fact that we have what we call 'gap analysis', audits that we perform, tell us that we are very in this sphere where we continuously, ourselves, if the controls that we've got to

mitigate, all the controls within the business. And we are quite proactive. If something happens to go wrong in one particular area, we are quite quick to pick it up and make sure it does not happen somewhere else.

IQ 2.2.2.8: What keeps you awake at night when you think about your job?

Participant 5: My job is very specific and thinking if [the company] will still need me in five years' time keeps me awake at night. In terms of my business functions, there is plenty but I work on those day by day.

Participant 6: For me, sometimes I do feel like I am fighting a losing battle, because I am working with quite a lot of sites and within those sites, we have different people with different backgrounds and personalities. I am privileged to work with the innovative people and it is always like, "What I am going to find next, what they will find out that I don't know about?" and they constantly come out.

Participant 7: Sticking to the theme ERP systems, I think it is more data management, security, and stability of the environment you are sitting with. Like if we have hackers trying to get into our systems, are we secure enough? Or we if we have a complete system failure, where would the system be? I believe it is the bigger risk that we have.

Participant 8: For me it is more like what participant 2 said. We have lots of sites that we do oversee. Again, it is about how innovative people can get and how you go about mitigating those risks and ensuring that people actually follow what is required from them.

Participant 7: What we tend to forget is that we live in a country where a large group of our population is crying for food and we are a basic food group. So they become very imaginative in their 'thieves' tactics in order to have food on the table. And I don't quite think that we often comprehend what a different frame of mind an individual is in if he is hungry. So we continuously have to change our processes and system security in order to have sufficient control.

Researcher: Thank you for your time and input to my project.

APPENDIX B3: GROUP INTERVIEW 3

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

IQ 1.1.1: Is there a lack of audit and internal controls in your organisational structure?

Participant 9: No, I have worked on many implementations and I have seen a lot of internal controls, a picture before, a picture during, and a picture afterwards. A lot of reconciliation reports, balancing activities, a lot of business sign offs, so I don't think there is a lack of audit functions.

Participant 10: In the project, we always ensure that wherever our customer is, that they review and sign off. And if we are having a functional change, they review and sign off. They know what they are getting into. We are very particular with our sign off and before we go live, we always make sure that the TB balances. We make sure that the financial corporate guys review and sign off before we even bring the system live. Because we are dealing with the ERP and financial information, we are very particular with the sign off and TBs.

IQ 1.1.1.1: Do the sign off processes delay the actual project implementation?

Participant 9: No, they are built into the project milestones. We take segregation of duties very seriously. There is a lot of segregation of duties between our different environments and we are very lucky that we have been able to afford it, as a lot of companies can't. The other to mention as well is that change control is very rigid in terms of change management processes. For instance If I want to do a change, I may not approve it. It has to be approved by two different parties. And I may not proceed until the request has been fully documented and approved. And you don't just get approval for nothing, just because I like your face, you must actually work for your approvals.

Participant 10: Usually if it is a big change, you must include your brief cases to prove that it does work. We also include any release note that may have to go to any customer that we affecting if it is new, and there is no roll back.

Participant 9: You cannot roll back indeed but you must produce evidence of testing before we grant any permission.

Supervisor: So there is good governance around that.

Participant 10: For approval for instance, only a small group of people is allowed to give approvals in the IT team, and there are certain changes that we know that only our solutions architect will approve.

Participant 9: We also have a very detailed communication program as well so that they are aware of the stuff that we are doing that will affect them. We do not just surprise them. If for instance the bakery division is affected by change, we negotiate that change with them. We negotiate the best time for that change with them and we communicate with all of their users that this change will be taking place on x, y, z date. We use email to communicate and phone calls to backup, as some people do not just check their emails.

Participant 10: For the downtime, we actually have timelines. If it is like 18 hours for three weeks, we start notifying the users before the downtime actually occurs. So, there will be at least an email once a week to remind them so they know. But we sometimes, we do have emergency where we need to do things immediately. It will go through but that is only approved by very few people. Only a few people can approve an emergency change without an RFC but after the change, you still need to log your RFC.

Supervisor: That is good because governance takes the back seat in an emergency case.

Participant 10: We worked very hard to get here, stuff happened without us knowing.

Participant 9: And we have also been slapped by the auditors and I think we are in a good place with controls. We all pushed together hard to get here.

Supervisor: Was it difficult to implement a culture of structured communication?

Participant 9: Actually, if I think back, we had some cowboys and the cowboys largely have gone.

Participant 10: There were some times on the IT side where everyone had access to all the information but we took that away to certain people only and you need to be SQL certified for instance to have access to the database.

IQ 1.1.2: Are there any challenges when considering auditing functionality during the project? If yes, please specify.

Supervisor: By auditors, we mean three things: The external auditors, which are KPMG, the internal auditors, PWC, and the audit functions within [the company], which are the people in charge of audit functions at [the company].

Participant 9: The involvement of the auditors differs according to the project. We have had some of our projects where our external auditors questioned our procedures in terms of references and naming the steps of the projects. So we have learnt from that to improve our projects implementation processes.

Participant 10: When implementing a new TB system for instance, our corporate finance plays the role of auditors and checks that everything balances.

Participant 9: I cannot recall a project where we had our external auditors involved in our projects. However, we had our internal auditors, PWC involved for reviews.

IQ 1.1.2.1: You have a GP system as a system; do you also have foreign systems such as the HR system?

Participant 9: We have a philosophy as Great Plans (GP) as our ERP and we will do as we can within the parameters of GP. Thereafter, we will look for other smaller systems that our business can afford.

IQ 1.1.2.2: Are the different systems a challenge to go through the different rules and audits?

Participant 10: The different systems are, due to an acquisition that we had a few years ago. The company that we bought was using a different ERP. So in the last two years, we are in the process of moving them to GP. The other software that we have are all integrated to GP. So we might have other software but it is not ERP.

IQ 1.1.3: Is the project team only composed of IT specialists? If yes, why? If no, why not?

Participant 11: It depends on the project. If the project is under an IT, it will be made of IT people.

Participant 10: There is usually a business user that is involved in the project. It is like a project sponsor from the business side, it is not mainly IT people. We have a mix with the business people.

Supervisor: Which includes the auditors as we mentioned earlier?

Participant 9: Not necessarily auditors, but they can perform the functions of auditors such as the checking and balancing functions.

SRQ 1.2: What audit functions are needed when implementing an ERP system?

IQ 1.2.1: What is your opinion of the importance and contributions of auditors and their functions during the implementation process?

Participant 11: When we do our project implementation, we normally have our Operation Finance team with us, depending on the unit that we are working with, which performs the internal audit function for us. Their support is very important for us because sometimes, the IT just want to get done and complete the project. And the auditors ensure that the financial controls are implemented and that they mitigate the risks. Also, when we do a new project, we consult our external auditors for the guidelines and compliance. For international companies, they support us in knowing what is required from us from international government.

Researcher: At which stage do you involve your Operation Finance people?

Participant 11: From the planning, the site, and after the implementation, they support in the balancing of GL and TB and ensure that the processes are working properly.

IQ 1.2.3: Besides the guideline and compliance functions, what are the other audit functions that you deploy during the implementation process of the ERP system?

Participant 11: Our Operation Finance people who perform the auditors function ensure that the financial controls such as access control and approvals for instance are in place, mitigate the risks and working properly and that the TB and GL balance.

Supervisor: In terms of approvals, how do you manage the access control and the approvals?

Participant 11: We have SLA's. It depend on the emergency, approval can take 2, 8, or 12 hours depending on the lot. For the leave approval for instance, if the person who needs to approve it does not within 12 hours, then it escalates to the next person. And if the next person does not approve within 48 hours, it will then be automatically approved by the HR department if they have spoken to the person. In GP, we have approval limits. We do take our SLAs seriously.

Participant 9: We are also very diligent with our SAPs. We've got SAPs for most things which is signed off by all the involved parties. We always try to make sure that our SAP designs are Best Practice and the **job As**. So when we have new people coming in, they have two things: 1) SAP, which is how it should work, and 2) the **job As** for how to do it. These two are also support for the SLAs because you cannot implement an SLA and expect compliance with everybody assuming they know the stuff. Job As and SAPs are the continuity of SLAs.

RQ2: How can audit functions assist organisations in ERP project implementation?

SRQ 2.1: How do organisations use the audit functions of the implemented ERP system?

IQ 2.1.1: If there are no auditors involved, how do you audit the implementation process? Is there always an auditor involved?

Participant 11: With all our projects, we don't have our external auditors but we always have our Operation Finance that performs the audits functions. It is a requirement that we have.

Participant 10: Also, after implementation, we always stay on site for a month end to make sure that they understand the new process, and we ensure that the system works 100% right and that everyone understands it before we hand it over to support.

Supervisor: So the post-implementation audit and the post-quality support that the implementation provides ensure that the system does not fail after implementation.

IQ 2.1.3: How involved are the auditors in the implementation process of the ERP system?

Participant 11: They are very much involved; they actually become part of the team and help us through the whole implementation process.

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

IQ 2.2.1: What are the benefits that auditors bring when they are involved in the implementation process?

Participant 11: It is beneficial to have auditors because they keep you financially sound.

IQ 2.2.2: What are the disadvantages when auditors are part of the implementation team?

Participant 11: I am going to be honest with you, I do not like it when external auditors are involved because they always send a junior auditor who does not always understand what is going on and you have to explain everything to him. They usually ask us questions that are time consuming from an IT side but that might have different benefits from a business side.

IQ 2.2.2.1: Generally speaking, people will say that the audit, governance and compliance functions delay projects, kill projects or even kill innovations. What is your opinion on that?

Participant 10: Governance and compliance might delay, add days to the projects because of the documentation that you need to fill in, but it does not kill the projects.

Participant 9: I think in terms of innovations, you can choose the governance and compliance as an excuse if you choose to.

Participant 11: Also, some guys come up with great ideas as well so I would not say that the compliance and governance kill the innovations.

IQ 2.2.2.2: I can see that the governance, compliance, and audit are on top of it; everyone seems to understand it and uses it for the best advantage. How does it affect the fear factor like, 'I better do everything right otherwise I am out'?

Participant 11: We have a very open door policy. I can go to [name] with anything, whether personal or a business issue and my team as well.

Participant 9: There is no backstabbing, we discuss the issue, and we do not bear grudges. We have a couple of values that are very key in terms of honesty, integrity and how we deal with people. We are very governed and trained on those things. It is our culture.

Participant 10: Also, if we make a mistake, we can go to our superior and say we have messed up and they will help. It is not like your mistake, you fix it. We work together as a team and [name] often says the biggest sin someone can make is to keep things under the table.

IQ 2.2.2.3: Do you think it is the same culture on site?

Participant 9: I think it is everywhere.

Participant 11: But when you get to a site, you will get a different picture because your blue colour workers and management on site are totally different and honestly, we cannot really say because we are not there.

IQ 2.2.2.4: What keeps you awake at night?

Participant 9: Finding the right person for the right position.

Participant 11: **I** like to have to my people happy so if one of my team members is not doing so well, it worries me because if they are not happy it will keep me awake.

Participant 10: When I cannot solve a problem in a project and I have deadlines kind of keep me awake.

Researcher: Thank you for your time and participation.

APPENDIX B4: INDIVIDUAL INTERVIEW 1

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

IQ 1.1.1: Is there a lack of audit and internal controls in your organisational structure?

Participant 12: Yes, I do. We are good in certain areas and in other areas, we are not so good. We specialise quite a lot in our supply chain, we've got very good controls there. Where we are not so good it is when you look at macro process level as your order to invoice cycle, we are not as good. Typically, anything that is a corporate function, we may not be as good as in the supply chain.

Researcher: Good. Do you want to add something sir?

Supervisor: I am thinking whether I should leave it to the end or bring it up now. It is super interesting what you say, you may not think so, but it actually is. I think for the rest of the conversation, let me put it in now and then you can frame against that. Let us just take a step back if you don't mind. When we look at your corporate culture, we have only spoken now to the head office, so we have some kind of idea of the head office. This is actually conflictual. I have this feeling and I have no proof that people we have spoken to, they were most probably finance people, are all very much control-, audit-orientated. They understand that, it is in their fibre.

Participant 12: Correct.

Supervisor: And I spoke to Chancelia about that this morning, it was as if the guys, maybe it is positive or maybe it is negative, are trying to please us with positive answers, if you understand what I am trying to say.

Participant 12: Laughing…

Supervisor: Now, there are two different reasons for that. Well, we saw two groups in groups of four and that's always very difficult in an interview process like we've got because they are afraid to talk openly and freely. But it is a very good experience for a learning researcher again to interview people in a group. I am happy that it happened because now she knows

how to be sensitised to this kind of environment. We struggled, I struggled, to find something wrong with your company.

Participant 12: Oh, I can give you plenty.

Supervisor: This might be a company made in heaven and we spoke about that this morning again when we listened to this. Yet there were underlined tension that I could sense. That is why we are very happy that you said YES because everybody here said NO, we are perfect.

Participant 12: There is no way we are perfect.

Supervisor: So I am so pleased, therefore I want you to expand on that especially against the voice of the others.

Participant 12: No problem at all. My expansion might also explain to you why those people gave the answer that they would. If you look at our business processes, we generate huge volumes of transactions.

Supervisor: I am surprised!

Participant 12: And those volumes of transactions generate a huge amount of risks. So we sell about half a billion loaves of bread a year, sometimes up to 600 million loaves of bread and we sell about a million tonne of grains and probably around one or two thousand tons of candy. So there is a huge amount of volume. But two thirds of the bread production is actually for cash, informal trade. So, if you look at that, our risk is loss of product, loss of cash. So the guys have spent two decades of their lives focusing on implementing controls around loss of stock, loss of cash. The people you have interviewed are focusing around loss of stock, loss of cash. And there, there is no much wrong. And if you look at our bad debt percentage, it is way too low; we stand 0.2% to 0.3% a year that we lose. It is very little.

Supervisor: Now I understand why they said no.

IQ 1.1.2: Are there any challenges when considering auditing functionality during the project? If yes, please specify.

Participant 12: Okay just explain a little bit what you mean with that.

Researcher: It is like if you are trying to implement a new project, do you find challenges adding the auditors in the project?

Participant 12: Yes, hugely, phenomenally.

IQ 1.1.2.1: Which ones? What are the challenges?

Participant 12: Firstly, your audit industry has a lot of theoretical knowledge but very limited practical knowledge. Secondly, their knowledge around computer-based systems to deal with huge volumes is extremely limited. So if an auditor comes to me and tells me he wants to audit my tax with the implemented sales, he wants it in Excel. Fantastic, I generate 120 million records a year, try to fit that in Excel, it is not going to happen. So, the moment I tell the auditor that, they are completely clueless. They have no idea what to do any further. Now how do they pull a sample out of 120 records because they cannot get it in Excel, run a test or pull a sample out and audit it because I cannot give them the data. I have to give it to them in a database or technical form which they cannot interpret. So it is very difficult to bring an auditor in because their skills from a technical perspective deal with much lower volumes. So there is normally a rampant process where you have to educate the guys a little bit, you've got to help them extract the data and then they cannot deal with that. Then you have to help them do the actual sampling. In fact, I go so far sometimes as to generate the audit for them, because they cannot deal with the volume.

IQ 1.1.2.2: And internal?

Participant 12: The team that you guys saw actually performs the functions of the internal audit. So if you want to look at it in the strict sense on the industry, that team is actually our internal audit. But we have the same issue when we deal with the external guys of PWC. The internal guys have spent 15 years educating them in knowledge management tools, computer-based tools, how to deal with large volumes. So, they understand. But when you want to bring an auditor in, that is normally a process to educate them again.

IQ 1.1.2.3: That is what she mentioned, bringing auditors is like a waste of time, but what about audit functions?

Participant 12: Let me just correct that first one, it is not a waste of time to have auditors there because what the auditor brings to that party is a different view on things. The risk that you are sitting with is that you have two parties in a project. One is the implantation and architectural team and the other one is the recipient, the customer. The customer knows what he knows and the implementer knows what he is implementing. But they tend to forget everything is happens around them and that is the function that your auditor brings in there. They can think a little bit around the adjacent controls. So for example, I am changing my general ledger structure. Fantastic! What is the impact on my income statement? What does my balance look like? What does my cash flow look like? Those are the benefits and questions that auditors can bring into that. So they are not a wasted function. I think there is too much attention sometimes given to analysing data and too

little on helping to broad questions on adjacent areas from the auditors. Does that make sense?

Supervisor: Absolutely!

Participant 12: Because the actual value that the auditor brings to the project, understand what do the auditor brings to the party, he brings zero knowledge about my business, very limited knowledge about my industry, very limited knowledge about IT systems, so what does he bring to the party? What he brings is exposure to various others places in the world that have done things different ways. So he knows what works and what does not. Also, he brings a little bit of what people call 'stupid questions' because he does not really know. So he is going to ask and force people to explain it to them, which forces them to think about it. That is really what the auditor brings to the party because if you cannot explain it to the auditor you probably don't understand it yourself. So it is not a waste, I just think sometimes it is not properly focused.

IQ 1.1.2.4: So you think that the auditors shall be more involved in the structure of the project and less in the data analysis?

Participant 12: Yes, I do not think auditors can add as much value to the data. Yes, they should do some basic computer-based tests, but I think the question around controls, adjacent processes, impacts and things like that, other stakeholders that should be there is much more important.

IQ 1.1.3: Is the project team only composed of IT specialists? If yes, why? If no, why not?

Participant 12: First, all my IT people are ex-accountants. If you want, one day I can explain why the best IT are the ex-accountants. So now, all my IT people are ex-accountants, ex-business analysts. So we are trying to do is what we call a "private banking experience" from an IT implementation. So we have the sponsor explain the project in a single conversation, and we will run through his video processes and do the research for him. So we are trying to create a little bit of experience for the sponsor. So because we do that, we bring a lot of other parties into our discussion. So we will try to bring in normally Corporate Finance, Operation Finance because they will drive the policies and standards in the company. Also from a political basis in a company, your Corporate Finance normally carries a lot of power because they are the guys that show the numbers and everything. So, if you bring them on early, you get their support, they even give a lot weight to your conversation in the business, which means that you as an implementation team do not have to deal with the conflict. That is the absolute worse place in the implementation system and it may impact negatively on the success of the project. You need to have the sponsor that is

driving the business, do the change for you, and you are merely the change agent. To ask a little poor junior IT to come and do it, no chances of success.

Supervisor: I agree with that. I have experienced that. I have seen it happening.

Participant 12: So you have to box it a little clever. You have to go with on-board people and build momentum and the one big thing that I believe is, you create demand for the project. So you do a lot of share and tell. It is very difficult and it is normal market focus. So implementation is market focus, supplying the market. If it does not help you supply then there is no demand. Create your demand first and then start supplying.

Supervisor: That is absolutely true.

Participant 12: So yes, if you can on-board those people first, analyse your powerbase in there. So what you want to have happen, at every small environment there is normally one person who is going to be standing up and be a little bit of a leader in the environment. So let's argue a call centre environment, one person will become the "Go to" person and everybody else will start going towards that person. You want that person on your side from day one. So then what you do is you get that person involved very early so you create the knowledge, because what happens that makes your support easier afterwards as well is that the people will keep on going to the same they have always gone to and that person leads the local change and you don't need to have a massive support on the other side. So you do a bit of sponsorship on-boarding, you do a bit of Corporate Finance on-boarding, you get the Operation Finance guys on, then are going to do the time and motion study, you see who the strong (players 17:04) are, then you bring them on board. And each person you bring on-board, you ask them who else shall be involved around them and they will tell people that need to be on-board. So we play quite a bit of a role in that and that creates a demand for you.

Supervisor: How do you go about doing that with your very diverse and distant plants, and bakeries and groupings around?

Participant 12: We don't do a project if we are not on site. So I ship a team there to sites and we are going to do it from there. So even if the technology sits centrally, you still implement where your customer base is. You still build those relationships with them. You do around them. So we have this implementation process where we will go there before the implementation. You will build relationship, will have lunch with the team, and get an interaction. You implement with them. Depending on the implementation, one of two things will happen. If it has to be a rapid implementation, so we bought something that did not come with the system, my team will take over the business, and another team will go and train the

business and keep the business work still running. That is why I have accountants. If it is not that bad, the business will keep on running and you will start with the ratios. So for every two users I will have one support person behind them, literally standing behind them and supporting them. And then you start increasing that ratio as you start stabilising until there is no one left. So we go to 1 to 2; 1 to 4; 1 to 7; 1 to 10, and to 1 for a site and then you go off for over a period. That normally takes about two weeks and then you go back for the financial month end. You balance the month end with them the first time and that is actually our sign off, it is the first financial period after you have done any changes to the business. I don't sign the project the day it goes live, or even when it balances. I actually don't care until the first financial period has produced what it should.

Supervisor: I have not thought about that one.

Participant 12: That is my own sign off. So when an income statement and balance sheet produces information that makes sense to your CFO, then your project works. Before that, your project is still in progress.

Researcher: Yes, it makes sense.

Supervisor: That one I will put into my class. I did not thought about that.

Researcher: Thank you, [name].

Participant 12: Pleasure.

SRQ 1.2: What audit functions are needed when implementing an ERP system?

IQ 1.2.1: What is your opinion of the importance and contributions of auditors and their functions during the implementation process?

Researcher: You have already mentioned that, but can you expand a bit please?

Participant 12: Yeah I will explain a little bit around that. I think the auditors can play a very important role. Your implementation team gets a little bit too focused on their job from time to time and so does your customer base because there is time pressure. I mean there is no project that does not experience time pressure. If there is no time pressure, you are probably doing it too slowly. So there should be time pressure and the auditors should be there to ensure that the controls are still in place. If I was in charge of an audit company and I was involved in a project implementation, my first step will be to identify the stakeholders and the controls. Secondly, all the measurements my senior stakeholders look after for that area. Once I have those three, I know what I need, that is for before, during, and after my

implementation. Those are the things I will check and those are the qualifications that I would ask. So I think they can play a very important role. I think they often shoot themselves in the foot too because they are trying to play in the data. And really that is not an auditor skill, to play into the deep volume data. They can, I do not say they cannot, but that is not their core skill. I mean, we do it every single day. I look at my sales, my company every single day, why would an auditor come here once a year and know better than me?

IQ 1.2.1.1: For sure! Do you have a kind of dashboard showing customers all the time?

Participant 12: We do it maybe a little differently. So, it's actually one of my points of pride. So like I said, we work with huge volumes. So we service 27 thousand customers a day; we have about a thousand vehicles and each vehicles will do about 67 deliveries a day. So 27 thousand formal customers, but about 60 to 70 thousand drops a day. So it's quite a huge volume. We do about 5 million invoice lines items a month. With all those volumes, we have to be able to give the guys our profitability by product, buy customer, by day. And we aggregate that into channels. So our dashboard will show you our profitability on a daily basis. So you think about it, it is a three dimensional measurement. You have time measurement that tells how does your profit trend over a period of time. You have volume which you drive because turnover and your marginal contribution. So marginal contribution is determined as your turnover less your truly variables costs (cost of sales, rebates, variable costs and those kind of things). And that is then what we measure on a daily basis. The fixed costs, we measure on weekly basis and the bakery on monthly basis. Which means by week two, our CFO knows what the profit for the month would be within the closest amount.

Supervisor: So you can act quickly if something is going wrong somewhere?

Participant 12: Which is some good, he knows right now what our numbers will probably be by the end of the financial year. It is a very good indication. Our company's turnover is significant as you can work it out. It is probably 17 billion a year.

Supervisor: That is magnate!

Participant 12: Good enough.

Supervisor: So your MIS system is really up to scratch, they do their things?

Participant 12: That is where we started. So people define us as a manufacturing company. We saw ourselves for a very long time as a supply chain company so all my RND went into a

supply chain. So I have the very system that starts from the warehouse through your entire cash cycle that way, and I've got good data on that. Not as good as on a production cycle, that is one of my weaknesses again (if you want to add another audit weakness). But that process is very robust and that's the people you saw who focus on that part of the process, very deep, very gradual information produced very frequently for them. But we bought a company in Mozambique and their investment was completely on the other side. So we are actually going to utilise their investment in production for us.

Supervisor: That makes sense. That is a beautiful buy.

Participant 12: Exactly.

IQ 1.2.1.2: What is the weakness in your production?

Participant 12: Because the IT system technology, measurement, and things like that we use, my team has not spent any effort on that for 20 years. So it is fairly archaic, it's not efficient, effective business processes. We do not generate a lot of data that you can analyse. I can't tell you different tolerances. We have data but the data I have today is the same data I had 20 years ago. The interesting thing is, the fact that we are so far behind does not make any difference on my profitability, which was very interesting to us. So companies that have invested in that make less money than who invested in the supply chain.

IQ 1.2.1.2.1: Have you made the comparison there? How do you know? Because theoretically you could have made more profit.

Participant 12: Yes, we have made the comparison. Theoretically, if you break your income statement in percentages, let us say turnover is 100%, so you lose about 25% in rebates and things like that, so there is a section in the middle. If you look at your gains and losses you can do in your production process, it is a lot smaller than your rebates, distribution or any other components. It is just so magnate. I mean we can save 0.2% of water maybe. Okay, fantastic! But it does not change at all. So what have we done for production is to try interrupting as little as possible and we basically from an accountant perspective have a disconnected system from production and supply chain. That is one of our major controls because you can see what production produces, you can see what the warehouse receives. And it's normally a cage with a hole that side and a hole that side, which gets locked and you can only open one door at the time. So what production puts in and those guys take out, I check that door live, I check that door at the end of the shift and they must balance. And then we do something called macro Recon. So what we do is we see this is how much grains went in, this is our plant to manufacture, this is how much we packed, this is how much we produced, this is how much we sold, this is how much came back

and that's how I turned it into cash. That's what I call my stock-to-cash cycle that I give my auditors. So I can balance our volume on an annual basis within half of a percent for the auditors to show them whatever came in in grains, came back as either cash or debt.

Supervisor: That is brilliant!

IQ 1.2.2: Are there any consultations with the auditors when implementing the ERP system? If yes, why? If no, why not?

Participant 12: Yes, extensively. What we try to do is to schedule the implementation to simplify the audit process. So you can do a substantive audit or you can do a computer-based audit. So we have the last four years been able to do a full computer audit so we don't do a substantive audit anymore. In order to achieve that, there are certain criteria, certain things that we need to deliver from IT side. You have your COBIT standards and so forth. Those are actually very easy to achieve. What is a lot more difficult is I need to implement certain things only at a certain time of the year. For example, if I make a major change impacting my financial reporting methods, rather at the first month of a financial year so I have a clear audit for the year and my six-monthly audit actually deals with the change in the financial processes. So my annual audit does not have to, they can rely on that six-monthly audit and then my annual audit is so much faster. So we do quite a lot of planning with our auditors, we do our downtime windows with our auditors to make sure that it all suits.

IQ 1.2.2.1: With the consultations, can you be more specific in terms of external and internal auditors?

Participant 12: Okay so let's do with both. I include both of those in the discussion of the project I have mentioned earlier. Internal auditors go a little bit further than external auditors. So the first part I have explained now is both internal and external. Internal goes so far to check the design of control within the projects. So I have them sign off on what control should be going forward.

IQ 1.2.2.2: The external guys, theoretically you see them once a year, but I can only assume that projects are literally every six weeks and so forth. Do you consult these guys at the beginning of every project, at the scoping or the design phase?

Participant 12: No, that's why I said the external auditors are not as much into details as the internal guys. We consult the external guys on methodology, processes, practices, other than the details concrete of the project itself. So we will discuss with them the plan for the year to change the financial reporting standards, some stock, maybe some data. And then they will tell us to make it easy for them; they would want to see these things when you do a financial

system. If you do data, they want to see those things; if credit, they want to see those things. So they will give you implementation practices, the kind of content and data and sign it off. So it's not the content, it's not the detail of the project or the project itself, it's more the methodology.

IQ 1.2.2.3: What do they need from me?

Participant: When they come to me and they want to do a security audit for example, one the thing auditors want to see is my security audit. Fantastic! What would satisfy your needs? Great, they want a security meeting every quarter. Okay. What must their agenda be? These kind of things. Okay, fantastic! What is the kind of stakeholder you want there? These people. Fantastic! That is what they give me. Internal auditors will tell me now that you have these findings, go and do this in that way, etc. And then the whole set of minutes and agenda for the year goes to the external auditors.

IQ 1.2.2.4: Do your external auditors use the reports of your internal auditors?

Participant 12: Not as often as I would like. They used to do it a lot more before. These days not as often anymore.

IQ 1.2.2.4.1: Do you think they should use their reports or not?

Participant 12: I would not rely on any auditors personally, but apart from that, I think the reason is when you start doing computer-based systems, you have two things to go and do as an auditor. The first thing is to go and check the codes that are on something, the processes and everything attached to that. And you have to go and check the results. Your internal auditor will come in and check the codes, the processes, and everything but your external auditor will probably rely on the codes but not on the results. He will re-audit that. And I don't necessarily have a problem with that, I think I have more a problem when they re-check the codes and re-check the results. What is very valid though is when they have re-check the internal auditors they find mistakes very often. Because when you think about that, the sampling cannot be so accurate.

Supervisor: That is absolutely correct.

Participant12: I mean if I write a sample system that is hundred thousand lines of codes, if you sample 10%, you are still missing the whole crack of the thing. And the other guy samples another 10%, there might be a 5% overlap. Yet there is still some more he is going to find. It is frustrating but it is also practical.

Supervisor: I mean that is the reality of where ever you do sampling.

Participant 12: That is how it is going to work.

Researcher: And what you are saying is that you get another opinion, another view of things.

Participant 12: Yes, I like two views.

IQ 1.2.3: What are the audit functions that you deploy during the implementation process of the ERP system?

Participant 12: It depends. A lot of audit companies have started to branch into IT work, which is interesting because it causes some complications for you when the internal auditors, PWC, also do some IT consulting work. So when they do the IT work, they can't really do the internal audit work. So I have to use a prepared internal team to do the audit work. And because I have done that, the external auditors must now re-check all of that. So it depend on the skills set that I am going to use first. If that skills set contains resources that work from the auditors, I would not keep the internal audit functions from that auditor. If it does not, if I am doing it myself, then now I would get the auditors to do a couple of things for me. So firstly, if the project includes the selection of technology, I would have them to do certain research for me that helps me make sure that the product I have selected has a good track record. So I will start there and what is interesting is that their view of a product carries more views way to the Board and my view for their brand purposes, and that is important. So you will get them to support that. I will help them identify risks. And I will build that into my risk mitigation plan from my side. So they are helping with that risk identification. I would then normally have them review my risk register, review my implementation plan from their side, and get involved in the controls and measurements that I am implementing.

RQ2: How can audit functions assist organisations in ERP project implementation?

SRQ 2.1: How are organisation use the audit functions of the ERP system?

IQ 2.1.1: If there are no auditors involved, how do you audit the implementation process? Is there always an auditor involved?

Participant 12: So my background is finance and the head of my PMO's background is finance as well. She used to be my accountant when I was in financial management in Pretoria. So what we will normally do from our side is we will act as the internal audit team and we will perform the financial controls and reconciliations, balance sheet reconciliation, trial balance checks, we would do all of those tests ourselves if the guys are not involved. And

we will store them, batch them and take them through to Corporate Finance for a second check and they will submit that to the external auditors at the end of the year for a check-up. What is interesting maybe, is this process has so far been the most successful of any approach that we have ever taken.

IQ 2.1.1.1: So do you always try this approach with every project?

Participant 12: We try because it is the most successful one. So where we have the capacity, we do that. So myself and my PMO perform the financial work, the reconciliation, the balancing and all of that. We do that as part of the implementation project and we deliver a fully balanced solution from accounting level to corporate, they go and check and sign it off. And that goes in turn to external audit. Extremely successful. Those projects have an 86% success right.

Supervisor: That is a high success rate. Far higher than any year.

Participant 12: When my PMO left for a year to New Zealand, the rate dropped by half.

IQ 2.1.1.2: You said when you have the capacity, what do you mean by that?

Participant 12: If I have the time. I do not have as much time as I would like to have. So in my team, we have different people specialising in different areas. So I have a guy called [name] who is in the US. He is a CIMA and a cost-accountant that we have brought in and he is in charge of my ERP system architecture. So we have cost-accountant level reconciliation, stocks, stuff like that that I have to do when I don't have internal audit, he will do that for me. My PMO's background is bookkeeper up to the trial balance level, so anywhere I have a bookkeeper up to trial balance and the pure finance stuff our debtors and creditors, I use my PMO to reconcile that. My background is consolidations, corporates financials, income statement, and balance sheet. So once my PMO and [name] have done their portion, it is my job to take it from a trial balance to the financial sites. But those three activities can consume quite a bit of work in a large project to reconcile them and fix them. So we can't always do it to the level which we would like. So when we don't have the capacity, we bring the internal and external audit to do that.

IQ 2.1.1.3: So is it more time consuming but more successful?

Participant: Firstly, Yes. Secondly, it is an extremely limited skill set because you are looking for someone with a very strong accounting background and experience, but secondly enough IT knowledge to do the stuff you cannot do in Excel. And that is not a combination easy to find.

IQ 2.1.3: How involved are the auditors in the implementation process of the ERP system?

Participant 12: The external auditors are not really involved; they review after the fact and they give advice on processes before, typically a whole year in advance. Internal auditors are involved a lot more in details. Let us split this into three if you don't mind. So you have external auditors KPMG, internal auditors, which is PWC, and the internal staff that you guys met. Internal PWC again, not too much unless we really have to, unless we don't have capacity, we will involve them. The internal staff however is very deeply involved in the implementation. They actually head up an internal audit for us.

Supervisor: For clarity, for the external auditors there are two: 1) the external auditors for the shareholders and public, KPMG in your case. 2) The internal auditors, PWC and lastly, 3) the Operation Finance department.

Participant 12: Yes, correct.

Supervisor: Interesting approach.

Participant 12: It has been extremely successful.

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

IQ 2.2.1: What are the benefits that auditors bring when they are involved in the implementation process?

Participant 12: Like I said, they bring that bit of objectivity. In the implementation process, a team very quickly becomes very subjective. The project becomes your baby and you become a little bit emotional about it. They become very attached to the project and defend it at all cost. People really stop thinking out of the box. They might be the best out of the box thinker, half way through the project that's all gone. Auditors keep on bringing that way of thinking and add a little bit of a different psychology to it.

IQ 2.2.2: What are the disadvantages when auditors are part of the implementation team? Are there any disadvantages in time or cost?

Participant 12: Disadvantage is always part of a project implementation. Yes, we have to train them first.

IQ 2.2.2.1: Is it time consuming?

Participant 12: It is time consuming but it is also fairly complex. I educated an implementer to a junior level over two years, a medium level over three years, and fast level over a minimum of

seven years. There is no way I can do that to an internal or external auditor. So they are always a little bit left behind.

Supervisor: That is a new one as well.

Researcher: Yes.

Supervisor: I would like to talk a little about the audit functions in others disciplines of your business. For example sales.

Participant 12: That is one of our weak areas.

Supervisor: It is quite interesting you say that no way in our conversation yesterday, the things came up such as production, that specific part of it and sales. HR came up and those kind of things. But it is as if sales and production is really top of mind. We are running the business, it is going smoothly, we have these massive volumes, no more volume now please kind of approach.

Participant 12: So it is actually a little project of mine. It has only been very recently, the receiving high-level attention. So probably a month ago, I managed to get a presentation to the Board to show them the true differences or the lack of quality in our sales processes. I am talking to the sales guys, to the sales partners. Going through time and motion study, understanding processes around why stuff look the way it does first before we get into any forms of controls.

IQ 2.2.2.2: Do you document those things?

Participant: Yes I do. So like I said, we spent about 20 years in our stock-to-cash cycle. But if you think about our processes, they are very just-in-time processes. In bakery, your processes are roughly 8 hours from order to delivery. It is very fast. And anytime between 12 am and 5 am the truck will leave. Very short process. But what is interesting is that our stock to cash processes only start when the order leaves the branch. At that point, the only thing we allow is the reduction in volume in an order. Nothing else. So if there is a bread damage, you can reduce the order, nothing else. You cannot change prices, customer, delivery date, you cannot change anything at that point. So the process that refers to, starts at that point onwards until the debtors has paid. And that's fairly robust.

Supervisor: That is very critical.

Participant 12: Yes, very small. So what we currently focus on, if you look at an order, there are data involved in an order. Firstly, there is a customer at the top left. The customer we have is

accurate about 99% of the time, that data are fine. Then you have products, they are accurate 99% of the time at this stage. But the 1% I know is a listing issue in the sales process. Then I have my quantity, which my customer wants, this is the quantity that we supply and there is a significant difference there, about 4%.

Supervisor: Why?

Participant 12: There are two reasons for this, the first reason is a listing issue, and the second reason is that we might not have stock or the product might not be available or released yet or something like that. But the biggest issue is actually pricing. Only 84% of the time the pricing is actually a match between what the customer thinks the price is and what we think the price is.

Supervisor: That is an issue! It is branding, a cash flow issue.

Participant 12: It is a serious issue. So this is one of the stuff I am currently busy with, that's why I wasn't here yesterday. I was interviewing people around that specific process. We have done some appointments recently for people to start looking after those processes, just to start to get up to speed, and then we are going to introduce the same kind of audit principles there. Everybody always thought its fine.

Supervisor: That is interesting, because when I look at mostly SAP basically with people that I know, it is very similar that sales form part of the ERP system, do what they want.

Participant 12: We actually have a second sales function. So the sales I just described look after what we call your formal sales, which is about a third of our business. You have your second sales function, which is your informal trade. Now, if you think about our Spaza shop, they've got no domicile, no bank account, they might not even have an ID and you have to try and to trade with that guy. That is the far more complex side that sits in our ERP side already. We have spent a lot of effort on those guys and those are a lot more under control than the formal retailer.

IQ 2.2.2.3: How come? Why?

Participant 12: They are a lot more profitable than the retailer. Think about it, the retailer wants his rebate, which is 25%. He will pay you in 30 days if you are lucky. If it does not match in a very small amount, he will pay you in 90 days for it. He will treat you quite poorly and then he is not actually supplying the mass market. Let us look at your informal trader. He pays cash every time, he is not interested in rebate but in lowest daily price. He is prepared to pay a little bit more than to what he will pay to macro wholesalers. If you think of informal

traders, every day he buys stock, trades and gets his working capital from the day's cash. So he runs that working capital every day. So if he has to go out to a macro wholesaler, he loses out on the day's trade. We go straight to him, so he is prepared to pay the premium. By doing that, we cut out the rebate so now we can start sharing that cost saving from informal shops. So they are a lot more profitable than the formal traders but not easy to deal with as well.

Supervisor: That is actually amasing. Because everybody I have dealt with that is dealing with the informal sector just say what a nightmare! So you have a unique competitive advantage there.

Participant 12: We do. And like I said, we've spent the last bunch of years doing that. So the kind of processes I implement is the same one your PnP will do if they have point-of-sales systems. So think about it, you go to your PnP, I buy something, I give my cash and they give me a till slip. That's it, because it is going to be a fast process. So my staff look a lot like that and then from an IT side, I actually track the customer through tracking technology.

Supervisor: I was looking for that and I did not get it yesterday.

Participant 12: So what we do is that we put a device on a vehicle to track how the vehicle moves. We do what we call route ride, we go out with the vehicle and we determine standards. So we know your average interaction between a truck and a customer is 120 seconds, some areas is 90 seconds. In that period you will get the customer's order, pick up the damaged products, give him his product, and collect his cash and off he goes. Also of importance, yes. But now it is 120 seconds, so I can look at GPs movements to determine whether they stand still for 120 seconds. Why did you stop? We can actually use Google Earth to show him the exact place he stopped by. If he says there was a new customer there then we can record him and make sure he goes the next day. That is automated.

Supervisor: That is amazing! But who is in charge of that?

Participant 12: Every bakery is in charge of their own that we do and then we've got the logistic guys over here that do the optimisation.

Supervisor: Now I want to talk about the audit function innovation. I think there is a perception that audit stifles innovation in ERP systems, in SAP for example, what do you think?

Participant 12: Yes. It does, it can if you do it incorrectly. So we work very close to the old OYM guy so the INVOCOM, I don't know if you ever follow the OYM. One of the processes that will

come out of there is that you have a lead in a follow process. So you have an 'into' in process and innovations as an 'into' process. Different parties are led by different parties and other parties follows. So if you have your conceptual phase and you have to run through the final which is led by your RND or your marketing team, and then your procurement team and auditing actually follow at that process. And as formalise that process, your controls have to improve. Now if you think about an NRD process, let us argue this biscuit for instance. I may do a thousand samples to try and test to make a biscuit, but in that sampling, I do not necessarily want to track every single detail. It is going to be a very long process. And I have to create pace for the person who is trying to bake this biscuit and try different without too many controls. But at some point they get to a final biscuit that we all like and all approve, and it's got ingredients, we have now sign off. They suddenly become an extremely standard process. The procurement has to be very specific standards, it is going to be a large volume, and the SOAs are going to be in place and going to get to every site and going to be the same at every single site. That process actually goes all to what we call listing in the retailer. So we see innovation stops when I got a new biscuit, innovation stops when my retailer says "Fine we will put it on the shelf" and it's the first time. Then my innovation is done up to that point.

Supervisor: I agree with that.

Participant 12: Then the last portion starts, which is more on the finance side. We then for a period of time track the profitability of that innovation to how we did progress around that. Because when you do innovations, you know what the market demand is, but you don't really know what your recipe and profitability will be like. It only becomes clear very late in the process.

Supervisor: So innovation starts from the idea till the balance sheet.

Participant 12: Correct. And we just swap leadership and followers.

Researcher: Thank you for your time.

APPENDIX B5: INDIVIDUAL INTERVIEW 2

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

IQ1.1.1: Is there a lack of audit and internal controls in your organisational structure?

Participant 13: No, the auditing function is very strong, particularly around the ERP systems and IT controls as obviously that is what I see but they are very strong.

IQ 1.1.1.1: Are the audit functions strong in the ERP system as well?

Participant 13: Yes, it is strong in the ERP systems (GP) as for the users as fields and changes can be tracked.

IQ 1.1.1.2: Is the audit function governance integrated into the ERP system?

Participant 13: Yes, it is integrated. It is how you set it up. There is nothing you have to do externally.

IQ 1.1.2: Are there any challenges when considering auditing functionality during the project? If yes, please specify.

Participant 13: No, there is not**.** I come from a very strong project background so I have always had to do my projects according to projects documentation and governance. So when I do my project, up until [the company], I have always been an external consultant, so whenever you do your project, you always do it with auditing and comebacks in mind, so you are always getting things signed, documenting, auditing and verifying controls. So no, I do not have any problems bringing auditors or auditing.

IQ 1.1.2.1: Do you include auditors in the ERP projects?

Participant 13: I do not include them in my projects but my documentation is always with them in mind. At [the company], we have people in charge of all the governance and project methodology setups already in place that we follow in all the projects. We do not need to have an auditor to be part of the project. So we don't really have that.

IQ 1.1.3: Is the project team only composed of IT specialists? If yes, why? If no, why not?

Participant 13: No, you have your project team, which is the team that is obviously doing the work, but if you are doing for a different department like at the moment I am doing a lot of work for HR, so I will have members of HR on my team which will be the power users which I will work very closely with. And for instance, we are using Sage payroll as a system, so I will work very closely to Sage with this project. So the project team is the IT, the external consultant and your customer.

IQ 1.1.3.1: For instance with the HR department that you are busy with at the moment, what is the role of the HR team you are working with for the HR payroll system project?

Participant 13: They have to check everything I do. What we do is that we sit down and discuss it. I tell them what we are going to do so they check it and sign it off. I then do the work; they check it and sign it off. So it is very strict process control throughout the system.

IQ 1.1.3.2: Do you audit the project when it is done?

Participant 13: We audit the project in a way that have we followed the project process? Do I have the necessary sign off? So yes, it is audited.

IQ 1.1.3.3: At which stage do you audit the project?

Participant 13: Right through we have checks and balances because they sign off before we can carry on to the next stage. So we have that at the stage gate and depending at what stage you are at the project or at the time of the project determines who signs it off. So let's just say at the designing stage, in IT my immediate manager will sign it off, then our architect manager will sign it off and HR will sign it off. So you've got all these checks and balances right the way through. So you continually have your project reviewed and checked as you move through. At the end of the project, I will have my customer HR sign off the project and then will give the project to the IT audit to check if I have got the right documentation and signs off. So we have a lot of internal controls audits.

IQ 1.1.3.4: Do you control the project six months or a year later after sign-off to check if the project is still doing what it should have done?

Participant 13: No we don't. Externally we don't do that either. Normally with the project, you finish the project and you have a period of handholding. In the current project for instance, we are now in the second month of handholding and I am still very much involved because the system is still very new to the users. But normally once a project is finished internally, it will be handed over to support and support will then carry on looking after it.

Supervisor: But that is where it lies.

Participant 13: Yes.

IQ 1.1.3.5: Is there some quality control through support afterwards?

Participant 13: Yes.

IQ 1.1.3.6: You mentioned Sage payroll system, is it an external system to the ERP system that you are using?

Participant 13: Yes, there is integration with the general ledger and salary figures but it is external because the GP HR and payroll is an American product so it does not really cover the South African rules**.** So that is why we have to look at something more South African that covers our legislation.

IQ 1.1.3.6.1: That is interesting. Do the employees have access to their data on the system?

Participant 13: They have a web-based program, which they can log into and they see their payslips and things like that and they can apply for leave and approve people's leave.

IQ 1.1.3.6.2: Can they change their addresses?

Participant 13: Make changes in the address and personal detail is still okay but from the moment they want something like your beneficiaries, that has an impact on provenance funds and pension funds and things like that. So at the moment we are looking at the later phase because it is kicking out processes where it goes to people and gets authorised and there is a lot of auditing to do. So at the moment the program allows it but we don't use it. You can apply for leave and that kicks off a whole leave process where it goes to your manager, but the rest we do not allow at this stage because of the auditing and the implications.

SRQ 1.2: What audit functions are needed when implementing an ERP system?

IQ 1.2.1: What is your opinion of the importance and contributions of auditors and their functions during the implementation process?

Participant 13: I really do not think it is necessary. I have been doing project and financial projects for 30 years, I have gone through how many audits, so I kind of know what auditors are going to look for and going to ask for. I know the kind of reports they want, I know what their checklist are. So in my implementation I take note of that. Auditors sometimes know things

but they can be slow in the process. As long as they need some requirement, okay, but that is my personal opinion.

IQ 1.2.1.1: Can the auditors be in some ways substantially beneficial to the project?

Participant 13: No.

IQ 1.2.1.2: Would you need the auditor to check for instance that the project is being aligned with the company objectives and needs?

Participant 13: It is just duplicating your project lead's drop; I really do not think that you need to bring auditors along. As the project lead, it is up to me to know that it is aligned. Right the way through, you have project meetings with the customer, you have meetings, and you have feedbacks. By bringing an auditor onto the project, you are bringing somebody else who is new to the project, which is going to drag the project out even longer. We have rules that we have to abide by in this project which are setup by [name] and we have to hit those marks. We hit those marks and everything is set up. We cannot move to the next step without hitting those marks. So if my documentation is done and done correctly and I have hit those marks and I die the next day, I have the documentation there. Also, I meet with my team regularly, I sit and speak with my team constantly and we have team and project meetings, we have meetings which daily I sit there and say what were you supposed to do yesterday? Did you do it? Why not? What is the bottleneck? What can I give you to do it? So right the way through, my team knows exactly where we are and what we are doing and what is expected.

IQ 1.2.1.3: But that is just good project management?

Participant 13: Yes. That is good project management so I do not need auditors, hell no!

Supervisor: So you do not want them and you do not see the benefit of having them.

Participant 13: No, I don't. Well, in my experience, auditors are people who sometimes slow the process down. It is like coming from a different view to maybe a financial view; it is like the less I have to do with auditors the better. It is like here is your report, take your report, bye. Here is your data, take your data, bye.

IQ 1.2.1.4: Does the auditing lie within the strict project management code?

Participant 13: Extremely, and do not forget, I am coming from an external point of view. So here it is an internal thing, HR is not going to sue our team if the project fails. Whereas externally, if your customer is not happy and you have wasted time and money, or given them a project

or a solution that they do not want, people sue these days. Gone are these days where people did not sue, but nowadays the economy is such in a way that if people do not get what they expected or paid for, they sue. So as a project manager, I have to continually cover myself so that if somebody sues, I can say this is what you wanted us to do, here is your signature and approval. So if you are doing this, you don't need auditing functions.

Supervisor: So it is an inherent function already.

Participant 13: Yes.

IQ 1.2.2: Are there any consultations with the auditors when implementing the ERP system? If yes, why? If no, why not?

Participant 13: No. What I do or would do here at [the company], you see here at [the company] you have everything so standardised and so reignited anyway that this is all covered already. Externally, if you would do a chart of accounts, you will get the auditors to view it and sign it off where at [the company]; you know there is no way you are going to do a new chart of accounts. [The company] has its standards and its ways and you do things according to that, you do not get creative. You have to stick to [the company's] rules and believe me there are millions.

Supervisor: And yet it seems that with all these rules, it is not spiteful to the business.

Participant 13: I think the way they have set the rules is ingenious and it is not spiteful to the business but there are so many checks and balances. I must say, initially when I started here, I was used to having total governance on a system, but here I do not have that. If I want to run something on the system, I have to have it signed off by two people. You do not have the freedom to just do things; you do not have the access to do things. And I want to run a script, I can write the script, then I have to send it through a process to get signed off and then someone else will have to run the script. Everything is very strict the way they do it here. It is actually incredible for a system but it is difficult to get used to.

Participant 13: Just a question, did anyone said they wanted auditors in the project or no? Your general feedback?

Supervisor: No, no one did. The auditor we had here were not interested in being part of the project as well. However, we had an interesting discussion around whether it should be beneficial or not.

RQ2: How can audit functions assist organisations in the ERP projects?

SRQ 2.1: How do organisations use the audit functions of the implemented ERP system?

IQ 2.1.2: If there are auditors involved during the implementation, how do you manage the audit process?

Participant 13: I will probably just get them to read through the documentation and also get them to sign it off. I see them as holding you back.

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

IQ 2.2.1: What are the benefits that auditors bring when they are involved in the implementation process?

Participant 13: None other than to drive you insane.

IQ 2.2.2: **What are the disadvantages when auditors are part of the implementation team?**

Participant 13: They drive you insane.

IQ 2.2.2.1: Why are you saying that? Have you ever experienced that?

Participant 13: Look here, you are so busy with your project, you know what you need to do to get from A to B, you have your team, you have your customer, you have your consultant party, if you have it. Now each one of those has their own inherent problems, each one of those has their own requirement from you. So you have your requirements. Now you bring an auditor in. They do not actually fit in anyone of those boxes, they are not adding value to anyone of those boxes, and now you've got to give attention to somebody else. It is like there is nothing they could actually want from you that you are not already doing. So it is just a distraction, it is adding a dimension to the project which is adding value, taking time and energy which is not needed. I think if you needed an auditor in a project, they would have been in a project years ago. It is just something that is not needed and distracts you from where your focus should be.

IQ 2.2.2.2: In your opinion, how tight do you think is the integration between the sites out there, the head office, the audit functions, and the ERP system? Do you think it is a tight net or is it more loosely?

Participant 13: I am actually not the person to ask because from what I see from my position I would say that it is tight fit. With the accounting system, you have debit and credit, which flow from

the bottom up and obviously everything has to balance; to just go on that, I would say it is a tight fit. But from being more involved in HR and payroll side and I have a fully integrated system with that, I don't have each site separate so I would say yes, it is. Judging from everything I see here, my perception would be yes.

IQ 2.2.2.3: When you look at the audit and governance that has been implemented here, do you think it enhances the processes for innovation?

Participant 13: I have not thought of that. For auditing and controls, it is not going to let anything flourish but I don't think it actually blocks it. You know, we have a department which focuses on innovation and that is IT innovation and product innovation.

Supervisor: You may use you 30 years of experience here as well.

Participant 13: Maybe a year ago I would say it is an obstacle to the innovation. From having a look from where I am looking now, I can see a lot more reason behind why they are doing things the way they are. I have also had a look at other companies where if you need something just to get it approved to do it, it can take weeks, but ours can take a day. So auditing and audit things have to be creative in such a way that it does not end a progress. Before I joined here, you will basically say okay we are going to do it this way, we are doing an implementation, so we would this script or whatever we had tested. Are we happy with the results everybody? Boom, we will do it. Here it is a bit different. We sit there and say we are happy with this and that and then we write it down. There are processes which have to get signed off. So yes, we have done it, but we have to go to people who are not involved in this project to get it signed off, okay, and then you will do it. So you have governance, but here it can take a day, a few hours or even an hour. If I am in a hurry, I can do the documentation and go and say please read this, sign this off, I can get that done very quickly here. So you still got that process. I know a bank where just that process can take over a week. So yes, auditing can hinder and it must become easy as it does. So you've got to be very careful in the balance and how you actually do things as to how it works.

Supervisor: What is interesting is that despite the fact that there are so many rules and regulations, ways of doing things in a set way and yet it seems like it is flowing nicely.

Participant 13: It is flowing nicely, but also I think I have been here long enough to understand how things work, where when I started, I still came with the external consultant mind where you almost feel cowboy where you do things and move quickly, where here I know what is going to happen so when I approach a project, I almost get things done in advance, things with the audit and the way the sign-offs are done. I know the process which is going to be done, I know what I am supposed to do and in a way I suppose that is also good.

Supervisor: I think that is the benefit. It takes away the cowboy element without stifling a necessary nice set.

Participant 13: What is also great is that things are not always on your project manager shoulders because yes, I have tested this, yes, I want to do this but I have other signatures in it. So if it is totally the wrong version, or against the company, it is going through other eyes before it actually gets implemented. So it takes the pressure off me.

IQ 2.2.2.4: When you look at the company culture, would you say that the culture embraces the broader picture of auditing (the audit functions, internal and external auditing, and controls)?

Participant 13: [The company] has a different culture to most companies and I think you can see the [company] way. It is something that when you join this company, you spend a lot of time in induction. There is a lot of time learning the [company] way, becoming a manager, the way they treat their people and they expect their people to treat other people. So people are embraced fully. So, it is the auditing, it is the way [the company] is, they do embrace people, they embrace everything. So if this is the rule or whatever, so this is the way it is done. It is the culture, it is the [company] way.

IQ 2.2.2.5: What keeps you awake at night when you think about your work in the company?

Participant 13: I suppose it is meeting deadlines, and that would be getting things done on time correctly.

Supervisor: But meeting deadlines is easy unless it is unreasonable.

Participant 13: Well, any deadline my team is not following.

Supervisor: Would you say deadlines are unreasonable?

Participant 13: No, the deadlines here are reasonable and I also feel when you take on a project, if I cannot get it done in the required time, I would say it. And if you find something that comes up, which is unexpected and we need to change the deadlines, I am sure that the CFO will be open to pushing it out. But it's still just a personal thing that you deliver what you have to deliver on time and on cost.

Supervisor: Do you have many projects?

Participant 13: We do at the moment. We have main ones and other ones. It changes, we usually have one or two big projects.

Supervisor: But you are not mainly concerned?

Participant 13: No, at the moment my project is all looking good.

IQ 2.2.2.5.1: I think the question was more on the operational level like what is your nightmare at that level?

Participant 13: I suppose it is the users; that they actually understand and can process and do things because no matter how much you can do training and how much you get people to sign off, that they understand and have their manuals. They all go back to their desk and sit there, whoopyy, let's see how we can break the system. And there will always be that one thing, so I suppose that's with anyone in IT and projects. Your end users are always your concern. So you always plan what they can and can't do in advance and take it from there. There will always be that one, otherwise we would not need a support system.

Researcher: Thank you very much for your time.

APPENDIX B6: INDIVIDUAL INTERVIEW 3

RQ1: What are the factors to be considered when introducing audit functionality in the implementation of an ERP system?

SRQ 1.1: What are the challenges that organisations face when introducing the audit functionality in the implementation of ERP systems?

IQ 1.1.1: Is there a lack of audit and internal controls in your organisational structure?

Participant 14: No, because our structure and the role of our structure is structured in such a way that we double-check each other.

IQ 1.1.1.1: When you talk structure, are you talking organogram or functionalities?

Participant 14: I am talking organogram and the role that as well as the roles which couple to the position.

IQ 1.1.1.2: Do you intend to tape the lower levels?

Participant 14: Yes, based on experience as a consultant from PWC I would say that in my opinion, this company has a better structure in terms of internal audits and controls than any other clients I have ever seen. Simply because we do not have “per say” internal audit functions, so we have to structure our functions in such a way that everybody takes accountability and responsibility for audit. So when the external audit comes, they give a double assurance as they don’t rely on the internal audits performed to give their opinion.

IQ 1.1.2: Are there any challenges when considering auditing functionality during the project? If yes, please specify.

Participant: No, I do not think so because the culture of [the company] in terms having a certain level of audit is quite big already. I must say the audit functionalities are good considered in the projects. There are a lot of checks and balances and controls.

IQ 1.1.2.1: What do you consider?

Participant 14: From a project point of view, there is a lot of governance and controls built around the projects, and from a system point of view, we always work from the most restrictive stock, meaning that we will maybe restrict access for certain transactions to one specific person.

IQ 1.1.3: Is the project team only composed of IT specialists? If yes, why? If no, why not?

Participant 14: No. we always have Operation Finance people in the team during the project (from beginning to end) for double-check purposes, to sign off at stage gates, and do the reconciliation that IT gives them.

IQ 1.1.3.1: Are the operational financial people part of the scoping of the project?

Participant 14: No, there are more involved at the stage gates for checks, balances, and reconciliation.

SRQ 1.2: What audit functions are needed when implementing an ERP system?

IQ 1.2.1: What is your opinion of the importance and contributions of auditors and their functions during the implementation process?

Participant 14: The contribution of auditors is very important as it is sanity checking. They also provide assurance to management as well as executives. Their contribution is very needed and it should be continued.

IQ 1.2.2: Are there any consultations with the auditors when implementing the ERP system? If yes, why? If no, why not?

Participant 14: Yes, we definitely do consult them for the stage gates.

IQ 1.2.2.1: What is your definition of an ERP?

Participant 14: Enterprise resource planning system is a company-wide financial management, resource, stock and state (what is the state of every functionality of the company) management. ERP system needs to synchronise with everything that is happening in the different functionalities of the company in order to account for every process in the company correctly.

Supervisor: That implies that you use all the functionalities of the ERP system.

Participant 14: Yes.

IQ 1.2.2.2: Now, do you use all the functionalities of Great Plans (GP) or do you have additional systems to it?

Participant 14: We use 90% of the functionalities in GP. There are some functionalities and modules as a whole that we do not use. One of the modules that we do not use is the HR management, we have a separate system for HR for good reasons. We use all the audit functionalities of the system but some of the modules we do not use.

IQ 1.2.3: What are the audit functions that you deploy during the implementation process of the ERP system?

Participant 14: Audit controls, reconciliations, booking controls, risk management, checks and balances. It is most likely financial controls.

RQ2: How can audit functions assist organisations in ERP project implementation?

SRQ 2.1: How do organisations use the audit functions of the implemented ERP system?

IQ 2.1.1: If there are no auditors involved, how do you audit the implementation process? Is there always an auditor involved?

Participant 14: I think it is self-financial controls, and because of the stage gates, the Operation Finance performing internal audit functions are always involved.

IQ 2.1.2.1: If you have for instance a good project manager who checks everything up to date, do you think that the auditor's job can be duplication to what the project manager is doing?

Participant 14: No, the audit work is not duplication; they have a contribution to add to the project in terms of audits functions.

SRQ 2.2: How do organisations benefit from using the audit functions in the ERP project?

IQ 2.2.1: What are the benefits that auditors bring when they are involved in the implementation process?

Participant 14: Financial assurance, processes assurance, structures and controls assurance. There is also outside opinion assurance.

IQ 2.2.1.1: Is there a cost benefit when you have auditors in the implementation processes?

Participant 14: Yes there is, especially about the process assurance, how to get rid of unnecessary processes.

IQ 2.2.2: What are the disadvantages when auditors are part of the implementation team?

Participant 14: It is usually perceived as an overhead, a bottleneck for things. In terms of the stage gates, they will see it as a bottleneck, as stopping me from moving forward with the project type of thing. Audit functions and auditors are always seen as a police check-up type of function who is going check their work.

IQ 2.2.2.1: Do you thing having auditors in the project is an unnecessary cost to the company?

Participant 14: No, I do not think so. I think that thinking of the company in wider way, as a whole, there is much benefit in the long run and financial saving cost.

IQ 2.2.3: How can your organisation benefit when introducing auditors to the implementation team?

Participant 14: Auditors bring auditor functions and a structure to the implementation processes according to the risks and controls and structure to the project implementation team, and that structure is important.

IQ 2.2.3.1: How tight is the system integration between the head office site and the system?

Participant 14: It is well integrated. We have a central ERP system which when we buy a new acquisition for instance, we integrate their functionalities in the central ERP that everyone has access to. And because everything is in a centred model, you will find that integration within the system is quite good.

IQ 2.2.3.2: Can you explain why your Operation Finance department says that because of the volume of transactions and data that they get, it is not well integrated?

Participant 14: The volume is huge and can be challenging from a human perspective for capturing at the sites, but the system can handle the volume.

IQ 2.2.3.2.1: What do you have capturing at the sites? Why is it not done electronically?

Participant 14: Remember that 60% of our customers is informal trade, which leads to manual work. However, as a company we are looking at some electronic wise options to handle the informal customers.

IQ 2.2.3.2.2: How do you audit transactions of informal customers?

Participant 14: As soon as the drivers gets back to the site, there is driver reconciliation on a daily basis in terms of the stock that went out and comes back in.

IQ 2.2.3.3: How do you see the audit functions in terms of innovation?

Participant 14: How can you create a system which learns and makes self-assumptions?

***IQ 2.2.3.4: Do you think audit functions can be seen as a blockage for innovation*?**

Participant 14: No, because controls should not be seen as control but as process improvements and to me, process improvement is innovation.

IQ 2.2.3.5: Do you think that the company has an audit functions culture?

Participant 14: Yes, because we have cultivated the audit functions culture in our general culture and also because of leadership promises, which the leaders abide by, live by and do but also in being a leader in what you do. Because leaders lead by example, you automatically create that culture.

IQ 2.2.3.6: What is your biggest nightmare?

Participant 14: Skills shortages as well as skills transfer. We have a very limited amount of people knowing a lot.

Researcher: Thank you for your time.

APPENDIX C: CONSENT LETTER FROM COMPANY X TO CONDUCT THE RESEARCH

Subject: CPUT: MTech research project - The role of audit functions in Enterprise Resource Planning - 04/05 Oct 2017

From: [Name of Manager at Company X]
Sent: Thursday, 28 September, 2017 10:03 AM
To: [Various employee names at Company X]>
Cc: [Names at Company X]; andre.delaharpe@cencra.com
Subject: CPUT: MTech research project - The role of audit functions in Enterprise Resource Planning - 04/05 Oct 2017

Hi All,

As discussed with [name] and sanctioned by [name], Dr Andre De la Harpe from the Cape Town University of Technology, is conducting and leading some Master Research within the ERP and Internal Audit field of studies. We kindly request your time for a max **40 minutes**, anytime when it will suite you, within [name] **Boardroom on either 4 OR 5 October 2017**. The survey will be in a form of an interview in a group and/or individual format.

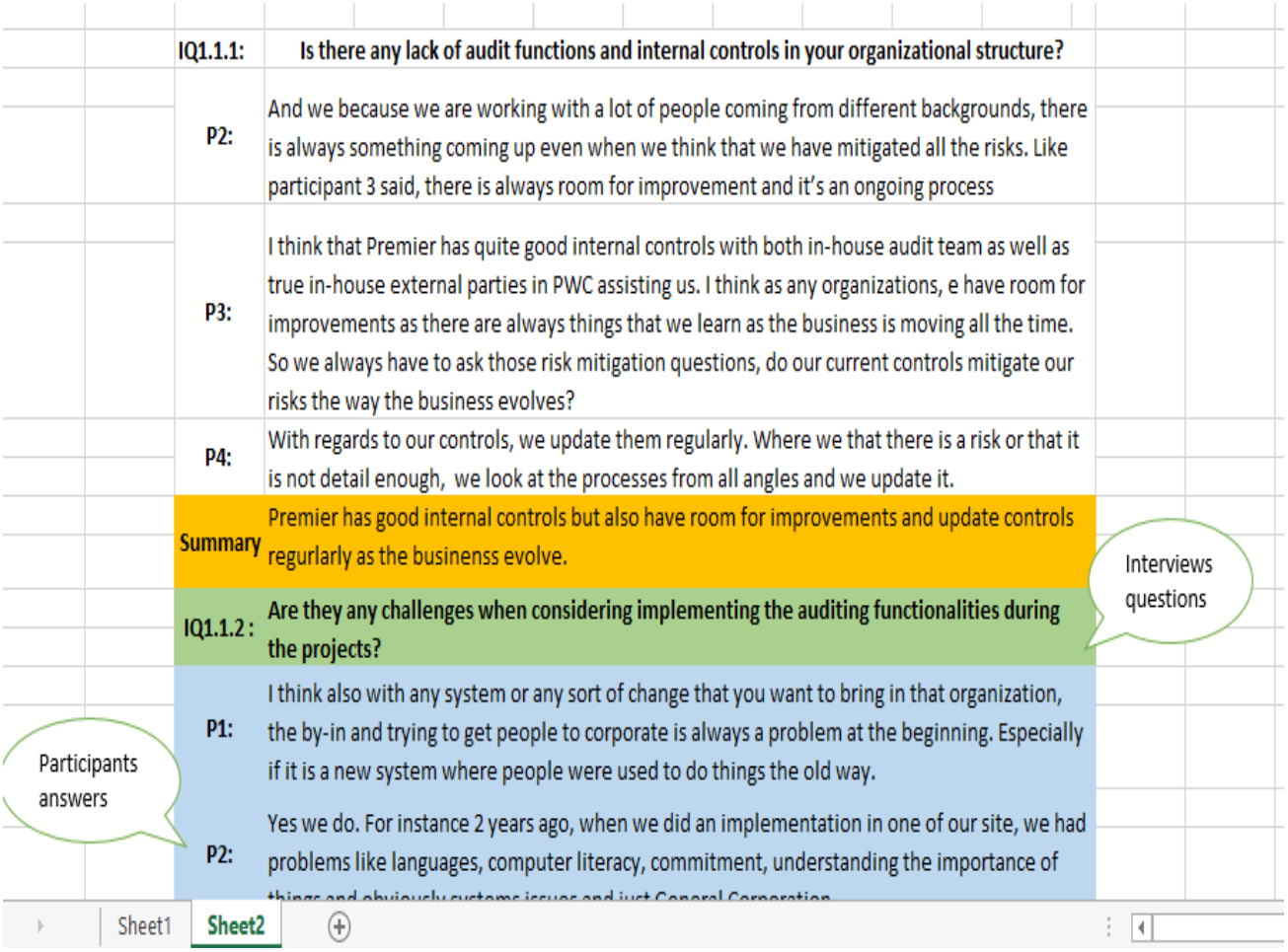
The topic of the Research: **The role of audit functions in enterprise resource planning.**

If there is any questions, please do not hesitate to contact me. We thank you in advance for your support.

Kind Regards

[Signature of Manager at Company X]

APPENDIX D: EXTRACT OF DATA ANALYSIS EXCEL SHEET



IQ1.1.1:	Is there any lack of audit functions and internal controls in your organizational structure?
P2:	And we because we are working with a lot of people coming from different backgrounds, there is always something coming up even when we think that we have mitigated all the risks. Like participant 3 said, there is always room for improvement and it's an ongoing process
P3:	I think that Premier has quite good internal controls with both in-house audit team as well as true in-house external parties in PWC assisting us. I think as any organizations, e have room for improvements as there are always things that we learn as the business is moving all the time. So we always have to ask those risk mitigation questions, do our current controls mitigate our risks the way the business evolves?
P4:	With regards to our controls, we update them regularly. Where we that there is a risk or that it is not detail enough, we look at the processes from all angles and we update it.
Summary	Premier has good internal controls but also have room for improvements and update controls regurlarly as the businenss evolve.
IQ1.1.2 :	Are they any challenges when considering implementing the auditing functionalities during the projects?
P1:	I think also with any system or any sort of change that you want to bring in that organization, the by-in and trying to get people to corporate is always a problem at the beginning. Especially if it is a new system where people were used to do things the old way.
P2:	Yes we do. For instance 2 years ago, when we did an implementation in one of our site, we had problems like languages, computer literacy, commitment, understanding the importance of

Interviews questions

Participants answers

Sheet1 Sheet2

APPENDIX E: APPROVAL OF TRANSCRIPTIONS FROM COMPANY X

[Email address of Manager at Company X]<Name of Manger> Feb 26

to shancelya, me

HI Shancelya

The transcripts are correct, valid and can be confirmed. I have been through all of them. One correction, name of [employee name], spelled [name]. I will provide you the information you requesting by no later than COB today. I am also at CPUT today if we could catch-up and me to understand your info needed, it will be great.

Kind regards and have a great day

[Name of Manager]
[Company Logo]