

Exploring the challenges in implementing enterprise resource planning systems in small and medium-sized enterprises

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DEDICATION

This study is dedicated to God and my family who have been my constant source of inspiration throughout this process. Without my family's love and support, this dissertation work wouldn't have been possible.

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LIST OF ACRONYMS

Abbreviation	Meaning
ERP	Enterprise Resource Planning
SMEs	Small and medium-sized enterprises
SME	Small and medium-sized enterprise
IT	Information Technology
ICT	Information and Communication Technologies
MRP	Material Resource Planning

ABSTRACT

The main objective of this study was to explore the challenges encountered when implementing an Enterprise Resource Planning (ERP) system in small medium-sized enterprises (SME). In recent years, ERP vendors have focused more on servicing the SME sector and for that reason, ERP has become a widely used business management system across SME organisations. Given the increase of ERP uptake, not all the implementations have been successful. Since ERP implementation affects all facets of business such as people, culture and processes, there are many challenges that a company encounters during the implementation of ERP in an SME. As a result, this can be a risk to the adoption of an ERP system by an SME because of the limited resource constraints. The study was conducted using a qualitative methodology, that followed an interpretive philosophy. The data was collected using semi-structured interviews and analysed inductively. The study found that all phases of ERP implementation are equally important. This includes the pre and post-implementation processes. The critical factors identified in the findings of the study are stakeholders' inclusiveness, management support during ERP implementation, continuous change management across the project lifecycle, continuous improvement, cost, planning and project scoping and continuous communication, between the organisation and the implementation partner as important factors that are important to the success of ERP implementation in SMEs. The implementation of ERP in SMEs has not been thoroughly explored since it's a growing field, specifically focusing on the SME sector.

Keywords: ERP, SME, change management, continuous improvement, stakeholders, inclusiveness, communication.

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1 Chapter One: Research introduction

1.1 Introduction

Enterprise Resource Planning (ERP) is an application software package that assists organisations to integrate their business process and information flow (Kimutai, 2014). The deployment of ERP systems has become a normal practice in today's business environment. The ERP systems have been referred to in today's business environment as '*The price of entry for running a business*' (Mathara et al, 2015). ERP mainly originated from the manufacturing and production industries, however, ERP such as SAP, JD Edwards and Oracle expanded their offering in the 1990s to other shared business functions such as human resources, finance and production planning (Ibrahim, 2015).

The implementation of ERP systems is very complex, come at a high cost, corporate time and requires resources (Vayyavur, 2015). According to Alhayek (2017) regardless of the big investment in ERP systems, there have been many implementation failures in other organisations. It is at the behest of the organisation to ensure that the end-users are well trained, and they are ready for a change of systems. The benefit and success of ERP systems partially rely on how it is perceived by end-users (Almuhayfith & Shaiti, 2020:17).

The adoption of ERP systems by small and medium-sized enterprises has been increasing steadily, as most of them have been replacing legacy systems with more advanced ERP systems. According to Harun and Hewitt (2013), SMEs are in a better position to acquire and implement ERP systems, which were only available to the big corporation due to limitations in finances as well as other business factors.

According to Harun and Hewitt (2013), SMEs have many options of implementing ERP systems to become more competitive, efficient, and customer friendly. Many businesses today invest in technology infrastructures such as computers and related technologies with the expectation of significant benefit and improve performance. However, studies such as of Kurbel (2013) present a contradiction to the expected results. Nicolaou and Bajor (2011) investigated the correlation between the company performance and ERP system implementation and the results indicated that there is a limited and insignificant correlation between the company performance and ERP system implementation.

1.2 Problem statement

SMEs are under immense resource constraint pressure to ensure that their growth strategy is met and also ensure operational continuity with fewer human resources. Many of these SMEs look to

the implementation of ERP systems to improve processes, efficiencies and eliminate redundancy. Implementing ERP in SMEs is quite a challenging task. Most SMEs do not have a streamlined process to match the modules of ERP's that are designed solely for SMEs, to streamline their finance, operations, and human resource functions. When implementing ERP in SMEs various challenges are encountered in the pre-implementation phase, such as:

- Inadequate requirement elicitation, because of the exclusion of key stakeholders in the SME business.
- Under budgeting
- Inadequate resource allocation because SMEs want to save costs by using very few resources.
- Short project timelines, because of the perceived benefits that come with the seamlessly working ERP system.

During the project charter phase where the business decides on the budget to allocate to various modules on ERP that are required by the business, the focus becomes ERP, however, the stakeholders tend to ignore other critical success factors such as infrastructure, change management and business process.

During implementation and rollout, the consultants, and project managers encounter challenges where they must further customize the existing ERP to match with the new and existing processes based on the requirement on the business, this, in turn, results in cost overruns. Cost overruns occur because of inadequate requirement elicitation and insufficient resource allocations. Many SME organisations have not been able to realise the full benefits of ERP implementation as a result of delayed implementation schedules, cost overruns of initial budgets (Haddara et al, 2016). The delayed realisation of benefits, in most cases, resulted in frustrations from all stakeholders, and this leads to users coming with their methods of doing work and not using the ERP system.

The other challenge in SMEs is old infrastructure such as servers, and computers that are using outdated software. Most on-premises ERPs require new infrastructure with sufficient disk space and memory for it to work optimally. The post-implementation challenges include change management issues, where users are not computer literate, not trained, or the users reject the new software because they were not involved in the project process, and the requirement elicitation. The exclusion of key stakeholders such as users who interact with the system day-to-day is critical to the success of the project.

Most studies indicated that ERP implementation failures were not caused by the ERP system, but rather by the massive complex changes that the ERP introduces in the company (Madininos et al, 2012).

Evidence revealed that not so much research has been conducted focusing primarily on the ERP implementation challenges focusing in South African SMEs. The knowledge from this research will be beneficial to SMEs in every industry looking to implement ERP systems. ERP is a serious financial bottleneck for SMEs and a source of increasing cost and management concern.

This study explored the challenges and the factors that form part of the pre and post challenges in the implementation of ERP systems in SMEs Furthermore, the study investigated the factors that cause cost overruns in the implementation of ERP systems in SMEs and also provided a better understanding of the critical success factors in the implementation of ERP in SMEs.

1.3 Rationale and significance of the study

The importance of this study was to address the challenges that are faced by SMEs that have implemented ERP systems in their businesses, the change management challenges and to explore the success factors associated with implementing ERP systems. This allowed the researchers to explore and perform a study to come up with possible recommendations in addressing the research questions. The outcome of this study contributed to improving and easing the adoption of ERP by SMEs.

1.4 Research aim and objectives

Aim

This study aimed to investigate the pre and post challenges that are encountered when implementing ERP in SMEs.

Sub-Objectives:

- a) To identify the factors that affect the implementation of ERP in SMEs.
- b) To explore the challenges that ERP implementation has on SMEs business value and performance.
- c) To assess the effect that ERP implementation has on SMEs change management.

1.5 Research questions

Main Research Question

What are the pre-and post-challenges that are encountered when implementing ERP in SMEs?

Research Sub Questions

- a) What are the factors that affect the implementation of ERP in SMEs?
- b) What are the challenges that ERP implementation has on SMEs business value and performance?
- c) What are the effects of ERP implementation on SMEs change management?

1.6 Delimitations and assumptions of the study

1.6.1 Delimitations

The scope of this study was to assess the challenges that exist when implementing ERP systems in SMEs, furthermore, address the challenges that have a negative impact on a successful ERP implementation. With SMEs increasingly implementing ERP systems, and experiencing challenges during the implementation process, with some of them failing to meet set expectations amid extensive research, more research was required to mitigate the implementation risk.

The study was conducted to answer the primary research questions, the sample size might not reflect all sectors of the population in Gauteng, and the study only focused on the SMEs that have implemented ERP systems and did not necessarily focus on the functional areas of the business but on the processes that are brought by ERP system modules.

1.6.2 Assumptions

The researcher assumed that the challenges in ERP implementation are found in facets of ERP such as data management, change management, process management, and business process re-engineering which will inherently impact all dependent variables of this study. The variables included the knowledge level of users, IT support, quality ERP offering and vendor support. The researcher assumed that variables not in scope will not affect the measurement for the dependent variables in scope.

1.7 Definitions of key terms

Implementation: Implementation is the carrying out, execution, or practice of a plan, a method or any design, idea, model, specification, standard or policy for doing something. As such, implementation is the action that must follow any preliminary thinking for something to happen (Rouse, 2020).

Small and Medium Enterprise (SME): are non-subsidiary independent firms that employ fewer than a given number of employees, this number is different across countries. At most SME upper limit is 250 employees, as in the European Union. Some countries set the limit at 200 employees, while the United States considers SMEs to include firms with no more than 500 employees (OECD, 2020).

Information and Communication Technologies (ICTs) is a broader term for Information Technology (IT), which refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, middleware, videoconferencing, social networking, and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form (AIMS, 2016).

1.8 Proposed chapter layout

Chapter 1: Introduction, Background, problem statement, research questions, delimitations, assumptions, and definition of key terms

Chapter 2: Literature review to answer the research questions.

Chapter 3: Research Design and Methodology, sampling, Data Collection, and results interpretation

Chapter 4: Analysis of Interview results

Chapter 5: Research Results Discussions

Chapter 6: Conclusion and recommendations

1.9 Chapter summary

This chapter explained the central components of the dissertation and presented the background, problem statement as well as the aim of the study. The aim and the primary questions of this study were all outlined. The rationale and significance of the study were outlined including the delimitation and assumptions of this study.

2 Chapter Two: Literature review

2.1 Chapter Overview

This chapter looks at two major sections. The first section contains the universal definition of small and medium-sized (SME), including the differentiation between business sizes. It also provides details on operational requirements and issues faced by SMEs when in the process of operating in a diverse socio-economic business environment. It is important to highlight and understand the distinctions between different business types based on their sizes. It is important to indicate and identify boundaries and categorise how these businesses would be referred to in the discussion. The chapter also provides insight into the challenges encountered during the implementation of ERP in SMEs.

The second part focuses on ERP systems, their definition, history, and related topics. The ERP market has grown and evolved over the years, including related hardware and infrastructure (Beric et al, 2018). The ERP systems were engineered and developed to integrate different business processes to form a collaborative view and seamless function to function operations into a single IT system comprising of a single database. ERP systems became a replacement system for legacy systems in Large Enterprises (LE), especially big multinational companies (Beric et al, 2018). New ERP systems are modernized to fit the business process, and they have grown to address different kinds of corporate business requirements.

2.2 Defining small and medium-sized enterprises.

2.2.1 Small and medium enterprises definition by number of employees

The difference between small and medium-sized enterprises mostly depends on the number of employees in the organisation and the revenue that the company generates. A company that has 10-99 employees is considered small and a company that has 100-249 employees is referred to as medium-sized (Magaisa, 2015)

On the other hand, Coyte (2012), defines SMEs as a business with not more than 200 employees, that falls between the below categories:

- 1 – 4 workers are referred to as ‘micro’.
- 5 – 20 workers are referred to as ‘small’.
- 20 – 199 workers are referred to as ‘medium’

According to OECD (2016), SMEs employ fewer than 250 people, and they are subdivided into Micro-enterprise which constitutes 10 employees, small 10 – 49 and Medium constitutes 50-249 employees.

2.2.2 Small and medium enterprises by turnover

SMEs in the South African context by turnover are defined as organisations that fall in the below categories:

- Up to R220 million are considered to be 'Medium'.
- Up to R45 million are considered to be 'Small'.
- Up to R20 million are considered to be 'Micro'.

(De Wet, 2019)

The South African definition of SME is different and uses flexible approaches to define SMEs, per industry. As defined in the De Wet (2019) the table below shows different definitions of industry-specific SMEs.

SECTOR	SIZE	MAXIMUM TURNOVER
Agriculture	Medium	R35 million
	Small	R17 million
	Micro	R7 million
Mining and quarrying	Medium	R210 million
	Small	R50 million
	Micro	R15 million
Manufacturing	Medium	R170 million
	Small	R50 million
	Micro	R10 million
Electricity, gas, water	Medium	R180 million
	Small	R60 million
	Micro	R10 million
Construction	Medium	R170 million
	Small	R75 million
	Micro	R10 million
Retail, motor trade, repair	Medium	R80 million
	Small	R25 million
	Micro	R7.5 million
Wholesale	Medium	R220 million
	Small	R80 million
	Micro	R20 million
Catering, accommodation, other	Medium	R40 million
	Small	R15 million
	Micro	R5 million
Transport, storage, communication	Medium	R140 million
	Small	R45 million
	Micro	R7.5 million
Finance and business services	Medium	R85 million
	Small	R35 million
	Micro	R7.5 million
Community, social, personal service	Medium	R70 million
	Small	R22 million
	Micro	R5 million

Figure 2.1 - Sector Specific SME Definition(s)

Source: (De Wet, 2019)

The sector-specific SMEs definition shows that there are many approaches to defining SMEs. The sector-specific definition shows that SMEs are defined by industry and overall turnover on the individual SME. Also, the definition of SME relies on a number of people and can change with one's perception, with effects from external factors. The factors can be government policy, location, and macroeconomics outlook. The factors can be ignored when defining a business as an SME.

A small medium-sized business is defined differently in different countries, in South Africa SME is defined as:

“Medium-sized businesses usually employ up to 200 people (100 in the Agricultural sector), and the maximum turnover varies from R5 million in the Agricultural sector to R51 million in the Manufacturing sector and R64 million in the Wholesale Trade, Commercial Agents and Allied Services sector.”

India defines Micro, Small and Medium Enterprises based on dual criteria of Investment and Turnover. In June 2020, India has updated the definition as follows in Figure 2:

Sr No	Classification	Criteria (in ₹)
1	Micro Enterprises	Investment <= 1 cr and Turnover <= 5 cr
2	Small Enterprises	Investment <= 10 cr and Turnover <= 50 cr
3	Medium Enterprises	Investment <= 50 cr and Turnover <= 250 cr

Figure 2.2 - India Definition of Small Medium Enterprise (SME)

Source: (Chitre, 2020)

The SME market in India contributes about 48% of India’s total exports and it is considered a key economic contributor in the country (Chitra, 2020)).

In the **European Union** and SME is an enterprise that meets the below definition of staff headcounts or turnover definitions:

Company category	Staff headcount	Turnover	Balance sheet total
Medium-sized	< 250	≤ €50 million	≤ €43 million
Small	< 50	≤ €10 million	≤ €10 million
Micro	< 10	≤ €2 million	≤ €2 million

Figure 2.3 - European Union SME Definition

Source: (Chitre, 2020)

Europe defines SME as follows:

“The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro” (Europa,2020).

The **United Kingdom** defines SME as follows:

“a company is defined as being an SME if it meets two out of three criteria: it has a turnover of less than £25m, it has fewer than 250 employees, it has gross assets of less than £12.5m (DBIS,2012)”.

The definition of SME differs country by country and in general SMEs are defined with the size of the economies taken into consideration. The information provided by APEC (2017) is given in the below table for all the SME definitions in the Asian pacific where x is the number of headcounts.

Table 2.1 - APEC Members’ Definitions of SME

		Employees	Sales / Revenue	Assets	Capital / Investment	Sector
Malaysia (effective on 1 January 2014)	Micro	< 5	< MYR 300,000			Manufacturing
		< 5	< MYR 300,000			Services and Other Sectors
	Small	5-75	MYR 300,000 – < MYR 15 million			Manufacturing
		5-30	MYR 300,000 – < MYR 3 million			Services and Other Sectors
	Medium	75-200	MYR 15 million – < MYR 50 million			Manufacturing
		30-75	MYR 3 million – < MYR 20 Million			Services and Other Sectors
Mexico	Micro	0-10	≤ MXN 4 million			Industry, Trade, Services
		11-50	MXN 4.01 million – MXN 100 million			Industry, Services
	Small	11-30	MXN 4.01 million – MXN 100 million			Trade
		51-250	MXN 100.01 million – MXN 250 million			Industry
		31-100	MXN 100.01 million – MXN 250 million			Trade
	Medium	51-100	MXN 100.01 million – MXN 250 million			Services
		51-100	MXN 100.01 million – MXN 250 million			
New Zealand	SME	≤ 19				
		≤ 50				
Papua New Guinea	SME				< PGK 100,000	
Peru	Micro		≤ 150 UIT			
	Small		≤ 1,700 UIT			
	Medium		≤ 2,300 UIT			
Philippines	Micro	1-9		≤ PHP 3 million		
	Small	10-99		> PHP 3 million – < PHP 15 million		
	Medium	100-199		> PHP 15 million – < PHP 100 million		
Russia	Micro	1-15	≤ RUB 60 million			
	Small	16-100	≤ RUB 400 million			
	Medium	101-250	≤ RUB 1 billion			
Singapore	SME	≤ 200		≤ SGD 100 million		
Chinese Taipei	Micro	< 5				
	SME	< 200			≤ TWD 80 million	Manufacturing, Construction, Mining, Quarrying
		< 100	≤ TWD 100 million			Other Sectors
Thailand	Small	≤ 50		≤ THB 50 million		Manufacturing
		≤ 50		≤ THB 50 million		Services
		≤ 25		≤ THB 50 million		Wholesale
		≤ 15		≤ THB 30 million		Retail
	Medium	51-200		> THB 50 million – ≤ THB 200 million		Manufacturing
		51-200		> THB 50 million – ≤ THB 200 million		Services
		26-50		> THB 50 million – ≤ THB 100 million		Wholesale
		16-30		> THB 30 million – ≤ THB 60 million		Retail
United States	Small	< 500				most Manufacturing and Mining industries
			< USD 7 million			Non-manufacturing
Viet Nam	Micro	≤10				Agriculture, forestry and fishery; Industry and
	Small	11-200			≤ VND 20 billion	Agriculture, forestry and fishery
		11-200			≤ VND 20 billion	Industry and construction
		11-50			≤ VND 10 billion	Commerce and services
		201-300			> VND 20 billion – ≤ VND 100 billion	Agriculture, forestry and fishery
	Medium	201-300			> VND 20 billion – ≤ VND 100 billion	Industry and construction
		51-100			> VND 10 billion – ≤ VND 50 billion	Commerce and services
		51-100			> VND 10 billion – ≤ VND 50 billion	Commerce and services

Source: (APEC, 2017)

Above we have highlighted different definitions of SMEs across all major economies, and we can conclude that there are diverse ways to define SMEs, depending on the region, country depending on the researcher’s perspective. From the above discussion, we can also conclude and say that the definition of SME depends on critical factors such as the micro and macro-economics, government policy, financial and geographical location and so on. SMEs cannot be defined without taking into consideration the critical factors when defining micro, small and medium.

2.2.3 SMEs growth in South Africa

According to the National Treasury (SA, 2013), SMEs in South Africa employs more than 60% of the workforce and contributes approximately 60% to South Africa's GDP. It is evident that SMEs have a massive role to play in the South African economy, and they contribute significantly to socio-political stability and unemployment challenges (SA,2013). Therefore, it is important to ensure the success of SMEs and their long-term existence.

According to (Mckinsey, 2021) SMEs across South Africa represent more than 98% of businesses and employ between 50-60% of the country's workforce across all the sectors and are responsible for quarter job growth in the private sector. This indicates that the SMEs sector continues to grow and it is the critical engine on South Africa's economy.

	 Majority of businesses	 Create private sector jobs	 Meaningful share of the GDP	 Enable inclusive growth
EU	99.8%	68%	57%	30%
G2	99%	65%	46%	25%
SA	98.5%	25.8%	39%	38%
	SMEs' share of total no. of businesses	SMEs' share of private sector workforce	SMEs' share of national GDP	SMEs owned by women

Figure 2.4 - SMEs across South Africa Performance Review

Source: (Mckinsey, 2021)

The SME market has been growing over the years, and according to StatsSA (2019), the SME market has been growing and eating away from the large business sector market, with growing turnover year on year. The SMEs have increased their revenue base over the six years and consuming the dominance of large players in the market.

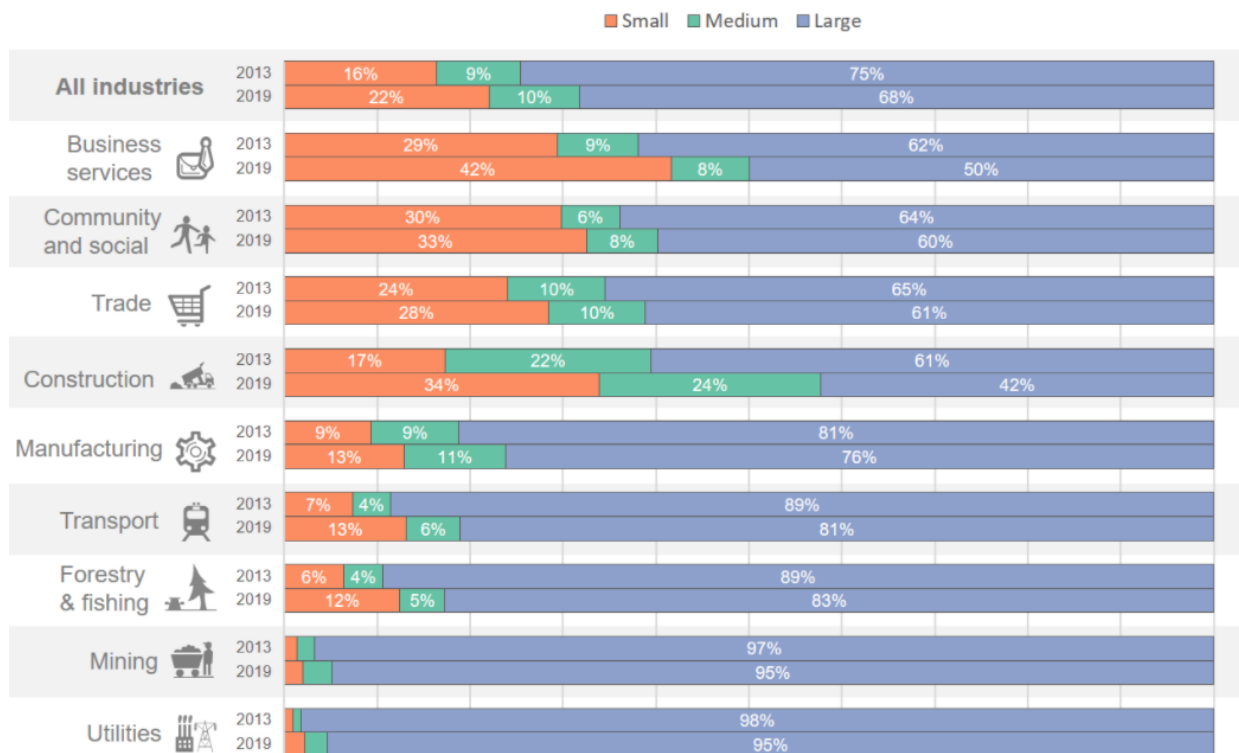


Figure 2.5 - SME Performance by Industry

Source: (StatsSA, 2019)

According to StatsSA (2019), Annual Financial Statistics, SMEs in 2013 accounted for 17% of total turnover in the construction industry, rising to 34% in 2019. SMEs have shown massive growth in the years between 2013 and 2019 in different industries.

From the year 2013 to 2019, the SME sector has increased turnover from 7.0 trillion to 10.5 trillion, representing an average annual growth rate of 7, 0%, and medium by 8.4% per year and large businesses by 5.4% (StatsSA, 2021).

This significant growth in turnover signifies that the SME market is well and ready to leverage technology to enhance their business processes and to solidify their supply-chain relationship with the integration of ICT systems such as ERPs. Given several different definitions of what an SME is, in this study, the researcher utilised the South African definition of SMEs.

2.3 SME and ICT adoption

There has been an increase in ICT adoption by SMEs over the years, and many have utilised ICT to run their day-to-day operations. ICT is considered to be a significant contributor in South Africa due to its direct influence on the SME economy (Pillay,2020). ICT can improve SME performance and increase productivity in different ways, this includes efficiency in resource allocation, reducing transactional costs and assisting in technical improvements (Pillay,2020). According to the WorldBank (2010), for every 10% increase in the broadband increase in the emerging markets, there is a 1.38% increase in GDP growth. Therefore, for SMEs to compete and grow they need to have the required ICT infrastructure in place. The study conducted by Ozcan (2015) found that among South African SMEs in the manufacturing and logistics industry, the majority of respondents lacked ICT knowledge and relied heavily on external expertise. This shows lack of skills in the workforce. The study concluded that SMEs relied and were dependent on their supply-chain relationships, and which necessitated that they keep up with technology to maintain these relationships.

The study conducted by SmeSA (2020), found that about 50% of SME owners indicated that technology posed a challenge to their businesses and that stable and reliable internet access was cited by the respondents as the principal obstacle.

According to Xero (2019), the company Xero conducted a study of 400 SMEs in South Africa, and out of the 400, almost 97% of SMEs said they invested in the technology during the year 2019. This investment in technology resulted in 53% of the businesses surveyed stating that adopting technology resulted in big increases in profitability, while 7% reported only a small increase in profitability. This shows that SMEs who adopt invest in technology in the short term will experience an increase in profitability. Investing in technology infrastructure, Applications and other ICT systems eventually increase efficiency within the business and it formalises business to business, as well as business to customer operations. Based on the stats, it is beneficial for SMEs to implement ICT systems to grow their bottom-line and grow as a business.

2.3.1 Barriers to implementing ICT in SMEs

According to Sarkar and Kareem (2015) , various factors influence ICT adoption, this includes the below five independent variables that affect the adoption of ICT.

- *Perceived Benefits.* Perceived benefits that the SMEs think they will gain from implementing ICT, they are more likely to adopt ICT.

- *The perceived cost of adoption.* The higher the cost of implementing ICT, the less likely the SMEs will adopt it.
- *ICT knowledge and skills of employees.* The less exposure and knowledge the employees have the less likely the adoption of ICT.
- *External Pressure.* The more adoption of ICT by competitors, the more likely the SMEs will adopt ICT.
- *Government Support.* The more the government support and promotes the use of ICT, the more likely SMEs will adopt ICT.

Ismail et al (2011:11) conducted a study that found that South African SMEs do perceive ICT adoption as beneficial and value-adding. However, they discovered many issues affecting the adoption and the value-adding aspects.

Lehner (2018) highlight a list of ICT implementation barriers that impact the implementation adoption of ICT by SMEs. The list includes the following (Wielicki, 2018):

- Lack of funding ICT
- Lack of Knowledge
- Lack of business process understanding.
- Lack of skilled employees.
- No standard operating procedures (SOPs)
- Lack of planning for ICT in the organisation

Belitski and Liversage (2017) who conducted a research study on 750 SMEs, suggested that the big stumbling block to the implementation of ICT in SMEs is related to leadership issues and management. Also, the other major barrier identified was resistance to change within the organisation. Kee (2013) argued that when all technical compatibilities and cost-related barriers are highlighted and addressed efficiently, SMEs could adopt and implement adequate infrastructure for technology adoption.

Most SMEs tend to execute the ICT adoption process with minimal, planning, with no consultation of different users and departments within the business, and this results in low implementation success. SMEs are susceptible to having limited knowledge on how to go about implementing requirements when planning for ICT adoption. This leads to an unclear expectation that does not align/match with the actual requirements. Other SMEs may not have set a strategic IT vision that fails to implement ICT. Some may have no access to capital funding to fund an ICT project or some may lack senior management support or competent project managers. Some barriers can be caused by IT resources that have insufficient skills level or functional skills to finish an ICT

project successfully. Some highly lucrative customers might demand certain technical integration that requires changes, resulting in a company rushing into the implementation without considering the repercussions (Nguyen et al, 2013).

2.3.2 Benefits of implementing ICT in SMEs

ICT implementation is important for all sectors of the economy and all fields of human activities (UKESAYS,2018). The implementation of ICT in SMEs can improve the standard of living and improve business operations as well a business efficiency (UKESSAYS,2018). Optimal and efficient use of ICT tools can help SMEs gain a competitive advantage by reducing costs and improving process efficiencies. Covid-19 has become a catalyst in the adoption of the ICT system in SMEs, many SMEs, and larger organisations have been adopting ICT at a faster rate than before, allowing employees to work remotely.

Many SMEs have moved their businesses into the e-commerce framework to swiftly and effectively interact with customers who are using smartphones, laptops and computers. E-commerce reduces transaction costs, increase transaction speed and reliability, and extract maximum value from the transaction value chains (OECD,2014). SMEs benefit from the utilization of ICT as it increases productivity, the efficiency of internal business, operation and connects SMEs seamlessly and affordably to external clients (UKESSAYS,2018).

According to UKESSAYS (2018), other benefits of ICT include increasing business competitiveness, vertical integration with other related initiatives, integration with clients, creating an enabling environment and the development of an internal competence in capturing the market opportunities. This shows that investment in ICT results in increased SMEs share in the market, and increases their return on investment (ROI), reducing cost and developing new products and markets.

According to Statista (2020), there has been a massive uptake of ICT solutions by SMEs and Large-scale businesses. The graph below shows the proportional uptake of the ICT system by SMEs and large entities.

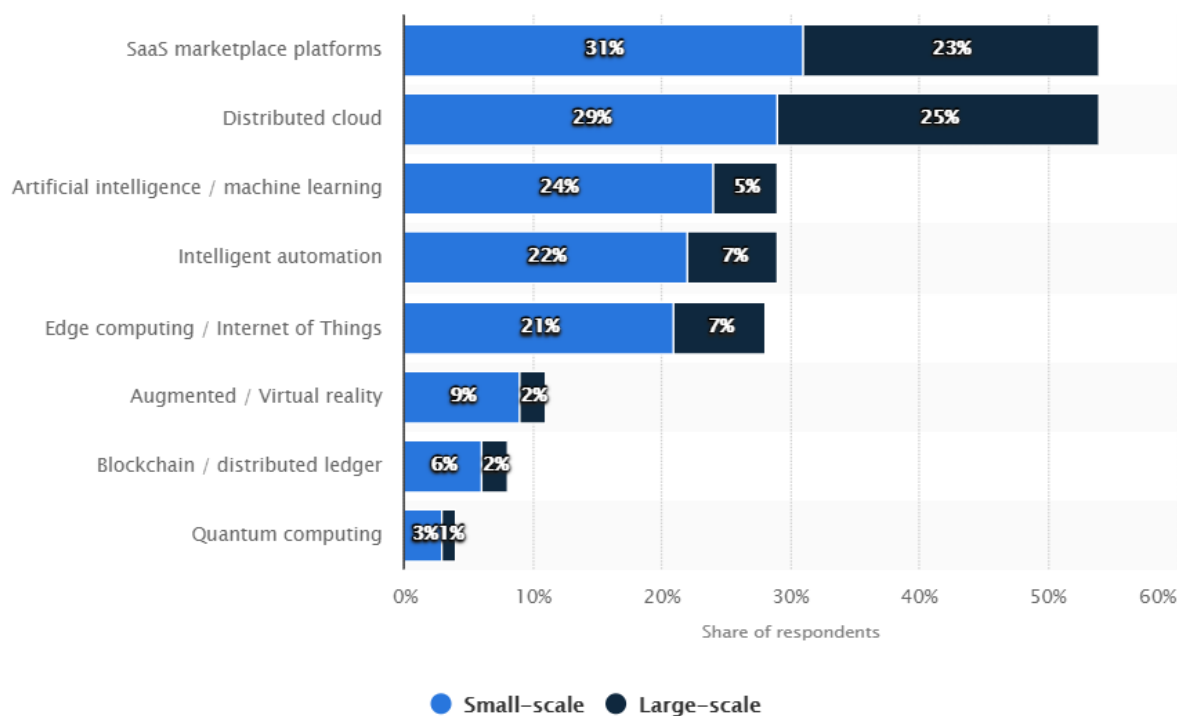


Figure 2.6 - Adoption rate of emerging technologies in organizations worldwide

Source: (Statista, 2020)

ICT adoption by SME is very important for SMEs to compete in their market of speciality and research cited, in the ICT literature review does show that there are perceived benefits that SMEs can get from implementing ICT in their organisation to streamline and ensure that the business runs seamlessly while leveraging new technology. For an ERP system to work and offer the organisation perceived benefits, all ICT systems should be leveraged such as servers and other applications, this will offer an SME increased effectuality, and cut some redundant tasks such as punching the same data repetitively from department to department.

2.4 Definition of enterprise resource planning

Enterprise Resource Planning is an application software package that assists organisations to integrate their business process and information flow (Kimutai, 2014). According to Abuhashish and Tahat (2020), ERP can be viewed as a development tool that integrates processes and data in one inclusive source. Abuhashish and Tahat (2020) presents a different view, by stating that ERP software combines and integrates all major responsibilities of several different departments and present them in a uniform, integrated way.

ERP is a business management system that is made up of an integrated set of software modules, these modules can be used to manage and integrate all business tasks within the organisation (Iriberry et al, 2015). Brugger (2020) defines an ERP system as a system that comprises of different software modules which allow organisations to automate and integrate. From the above definition, it can be concluded that ERP can be defined from two different aspects, such as production and planning, Inventory, cost optimisation, and the second aspect is ERP as an IT product/tool. ERP system is a subset of ICT in its greater context since the implementation of ERP in any business required the deployment of other ICT resources for it to integrate the operation department effectively and seamlessly.

2.5 Enterprise resource planning history

ERP evolved from MRP systems which were first discovered in the 1950s during the dawn of the Industrial revolution to enable companies to re-order raw material based on historical usage. In the 1970s the system was improved to enable companies to forecast material requirements on future requirements (Goldston, 2020).

ERP system was first used in the 1990s, and it had various functionalities across industries such as engineering, project management, finance, accounting, and Human resources. The approach of the new generation ERP was modular with advanced features added (Omniaccounts, 2019)

The diagram below depicts the history of ERP from 2010 to 2010, and the technological transformation that occurred between the years as ERP manufacturers improved and developed a more comprehensive ERP system (SAP, 2020)

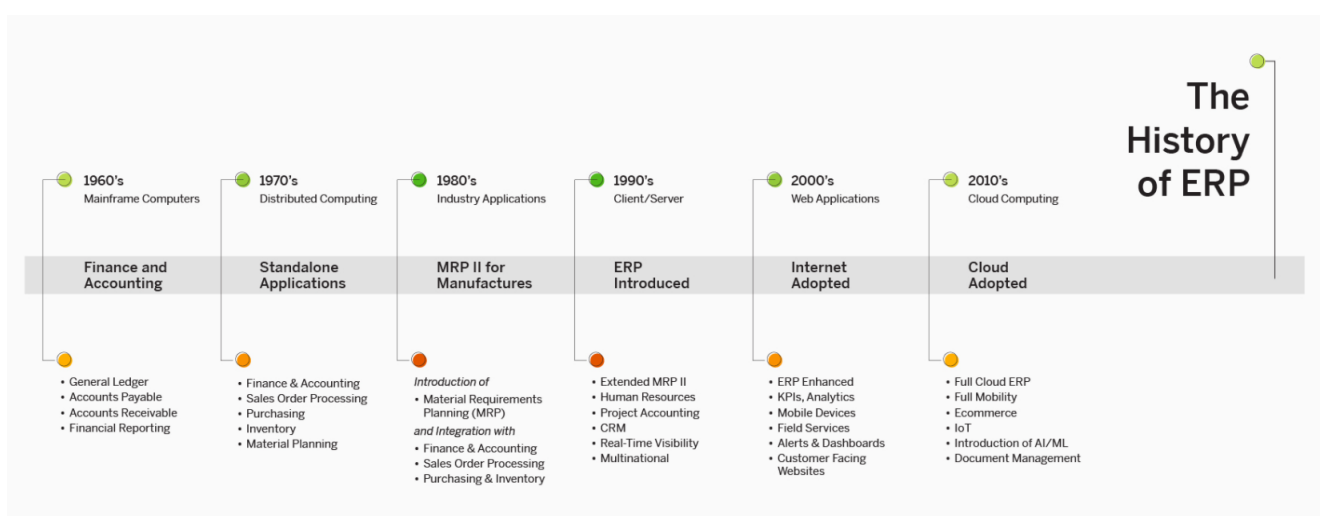


Figure 2.7 - History of ERP from 1960-2010

Source: (SAP, 2010)

Figure 2.7 above shows ERP evolution, ERP in 1960 focused more on inventory management & control such as accounting general ledger, account receivables and financial reporting, it then evolved in the 1970s to incorporate more functionality such as Material Resource Planning (MRP), to schedule production processes, raw material purchases, and material planning control, in the 1980s MRPII was introduced to incorporate coordination of manufacturing processes, production planning, purchasing and inventory. In the 1990s ERPs was introduced, focusing on improving the performance of internal business processes, production planning, purchasing, Inventory control, order tracking and share modules such as marketing, finance, accounting and human resource (Amran, 2013). According to Rosa (2012:540), the ERP market has been growing steadily worldwide and adoption of the software has been increasing making ERP the largest segment of the enterprise application market.

According to Rosa (2012:541), a survey indicated that out of 187 companies tested about their ERP implementation experiences, 61% exceed their scheduled timelines and 74% encountered budget overruns. This shows the prospects and the willingness of organisations to implement ERP. However, they are unable to enjoy their ERP because of the challenges experienced during implementation, and after.

2.6 Enterprise resource planning solutions in the market

There are several ERP solutions in the market today assisting businesses with their business processes and seamless system integration. The new cloud ERP, offerings of cloud subscription support services, helps vendors to grow their share in the market and win the midsize market (Nguyen, 2013).

According to Selecthub (2019) the leading ERP top 10 solution providers out of 317 as rated by the analyst, are as follows:

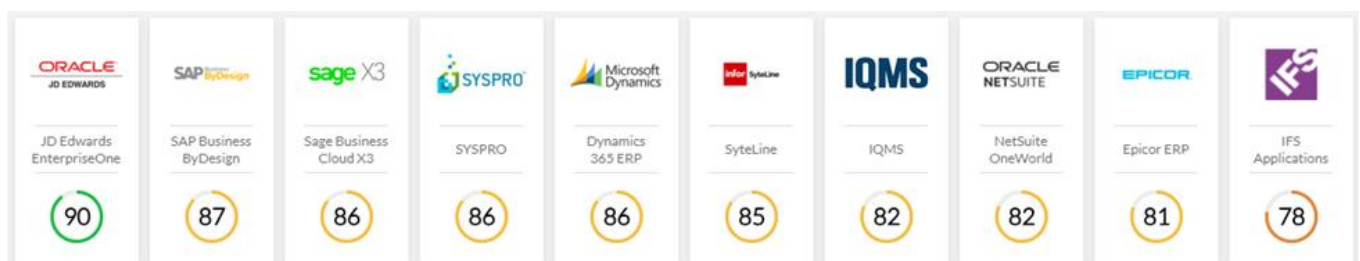


Figure 2.8 - Top 10 ERP vendors

(Selecthub, 2020)

In recent years, ERP suppliers have tried to maximise their market share by acquiring other small rivals in their market to increase their footprint, for example, PeopleSoft acquired J.D Edwards &

CO for \$1.7 billion in 2003, later in the year, Oracle Corp showed interest \$5.1 billion in cash (Alizai, 2014). In the year 2004, Oracle acquired PeopleSoft for \$10.3 billion, ending a bitter takeover bid that lasted for 18 months (Alizai, 2014).

2.6.1 Types of ERP systems in the market

Legacy systems and other technologies are increasingly becoming a burden to most organisations as we progress into the post-digital era. As a result, many organisations are in the process of moving with time and replacing their legacy system with newer digital ERP systems to gain a competitive edge in the market. There are different types of ERP systems in the market available to SMEs, namely (Hitachi,2020).

- **On-premises ERP systems:** On-premise ERP is a solution where licenses are purchased based on the number of users who will be utilizing the platform to do work, and the software is installed locally at the organisation's server room. Licences are one-time, upfront; however, if additional modules are required the organisation will have to incur future costs. The on-premise ERP system has burdensome and costly software maintenance, support costs, which have to be paid annually to receive vendor support, upgrades, etc.
- **Cloud ERP Systems:** Cloud ERP is offered as 'software as a service (SAAS)', the organisation pays subscriptions to use the system, depending on the licence agreement, the organisation can access the ERP through any device anywhere in the world, where there is an internet connection. Data is stored in the cloud (in the data centre) and hosted by another party's servers, not company servers, however subscription terms can vary.

2.6.1.1 Advantages of on-premises ERP for SMEs

Many big organisations and few SMEs have implemented On-premises ERP as opposed to the cloud ERP system, citing the benefits the counter benefit of once of costs, relative ease to add enhancement and the advantage of having managed own systems and protecting the organisational IT systems from cyber security challenges (ERPDesk, 2018).

The following are the challenges that come with an on-premises ERP solution (ERPDesk, 2018).

- **Data Control** – ERP manages, handles sensitive and confidential business information that can be detrimental to the business if it ends up with a third party outside the organisation. The data includes employee information, accounting and expenses, supply chain and logistics information and other business intelligence data that represent significant value to outside parties. Hosting ERP on-premises allows organisations to

control their data, and control everything including the security measures used to manage user access and protect their ERP systems against cyber-breach.

- Less Vendor Dependency – Unlike cloud ERP, which requires vendor approval for every customisation done, provided, the vendor allows the enhancement, on-premises on the other hand removes vendor dependency, so the organisation has total control in making changes when it is required.
- Limit on-going costs – The initial upfront cost is higher as compared to cloud ERP, however, the total cost of ownership might end up being lower, depending on the cost of ongoing subscription and support services on the cloud. The initial upfront cost is dealt with once and the only ongoing cost are IT maintenance. It is important to select ERP based on the total cost of ownership, ensuring that the skill for the maintenance of the ERP system is available and at an affordable price.
- Foundation for future hybrid cloud expansion – on-premises ERP allows the organisation to cross hybrid the on-premises and cloud if it is required by the business, however, the reverse is complicated to achieve. Organisations can incorporate other public clouds applications as desired, without compromising system security.
- Easier customisation – on-premises ERP system allows the organisation to customise their process and enhance as desired, unlike cloud ERP. Organisations can customise workflows without involving the ERP vendor.

2.6.1.2 Cloud ERP for SMEs

Cloud computing is a growing and promising trend of computing, that has surpassed the expectation of both academic researchers and as well as the software industry itself. Cloud computing provides availability, scalability, and flexibility, as a result, the infrastructure becomes cheaper since all infrastructure needs are handled by a 3rd party data centre provider (Mohamed et al, 2017). Cloud computing refers to software, applications, and hardware delivered through the internet as a service (Ahmad & Cuenca, 2013). According to Singh et al (2016), cloud computing comprises of three model offerings:

- Software as a Service (SaaS)
- Platform as a Service (PaaS)
- Infrastructure as a Service (IaaS)

Cloud ERP system falls under the Software as a Service (SaaS) category, since it targets end-user businesses, Platform as a Service (PaaS) focuses on middleware infrastructure for developers, for them to develop SaaS applications, and Infrastructure as a Service (IaaS) focuses on the delivery of computing hardware and software that targeting system administrators

(Mohamed et al, 2017). These computing models allow the organisations to pay-per-use and also pay for upgrades if required.

According to Mahomed et al (2017:7), Cloud ERP solutions are offered in the market via the Software as a Service (SaaS) model, especially for SMEs, and ERP systems are considered as cloud-based when it is supported by the characteristics of cloud computing.

2.6.1.3 Advantages of cloud ERP for SMEs

Cloud ERP systems offer SMEs major benefits, such as (Mahomed et al, 2017).

- Lower upfront cost: since the system is managed by a third party, the organization does not need to pay for the building of server room infrastructure they just pay for access over the internet.
- Lower operation cost: The cloud service providers are responsible for the infrastructure and operations of their processes as well as their operational costs.
- Rapid Implementation: since SMS is a small company it is very quick to implement ERP systems rapidly, the SMEs mostly have multiple processes that require re-organization and that makes change management a key issue before implementing cloud services.
- Scalability: Cloud services are highly elastic, depending on business needs the SaaS provider can scale the system up and down as required depending on the license agreement.
- Focus on core competencies: Cloud ERPs assist organisations to manage their business more effectively and easier from any corner of the world.
- Advanced Technology: It is easy to leverage available technology when using cloud ERP as compared to on-premises ERP.
- Improved Accessibility, mobility, and usability: Cloud ERP can be accessed via mobile from any corner of the world, the increased ease of use access increases usability.

Seamless integration with other cloud services: There are plenty of applications that can be easily integrated with cloud ERP via APIs (Application Programming Interface) to create more value for the business.

2.6.1.4 Disadvantages of cloud ERP for SMEs

Cloud ERP systems offer SMEs major benefits. However, there are also challenges such as (Mahomed et al, 2017).

- Subscription expense

- Security Risks
- Performance Risks
- Customization and integration limitations
- Strategic Risks
- Compliance Risks
- Loss of IT Competency
- Functionality Limitations
- Information Security
- Loss of technical knowledge

2.7 Enterprise resource planning functional features

ERP systems are comprised of different modular components. For an ERP implementation to be successful there must be an understanding of the integration of these modular components (Albadri & Kovacevic, 2013). The implementation of ERP is to integrate information systems across companies' core departmental areas (Hoch, 2012).

ERP systems formalise business operations including manufacturing, purchasing, sales, marketing, human resources, and production planning into modules (Rajapaksha & Singh, 2012). According to Zhao and Tu (2021), ERP applications deliver integrated benefits to the employees that are working in a different department, such as finance, human resource, and warehouse due to it being a single platform.

2.8 Enterprise resource planning technical features

ERP systems comprise of 3-layer server architecture including database, application and the presentation layer that is referred to as the graphical user interface (GUI). The GUI feature allows users to interact with the ERP application and enables users to see one uniform platform regardless of the module being used. Most ERP systems allow for customisation with business processes. According to Haddara et al (2016:429), the introduction of object-oriented development has made customizing of ERP products easier. Companies have managed to customise and in a short time get the result. According to Haddara et al (2016:430), It is more complicated to measure or to compare sufficiency than effectiveness. The reason being the level of transaction handling differs from organisation to organisation.

2.9 The benefits and challenges of ERP

2.9.1 Functional benefits of enterprise resource planning systems

ERP system comprises of different modular components. For an ERP implementation to be successful there must be an understanding of the integration of these modular components (Albadri & Kovacevic, 2013). ERP systems enable the organisations to run their operations effectively and efficiently, and it allows the employees to interact, collaborate in an informed-enabled environment (Ullah et al, 2018).

According to Goldston (2020), the following benefits were identified from a study after implementing an ERP system in an organisation.

- Improved Efficiency and control
- Better controlling of stock and improved purchasing strategy
- Better communication between different business units.
- A better understanding of Material requirement planning

Standardisation imposed on ERP systems has been a major benefit to system implementation (Hatamizadeh & Aliyev, 2012).

2.9.2 Challenges of enterprise resource planning applications

ERP implementation have been failing over the years and others exceeding the timelines set for implementation, the cause of this failure has and was always believed to be changed management and nothing to do with the competency of the implementation team or the implementation management (Hoch, 2012). Handling the adoption of ERP and managing change, mostly identified is the staff/user's resistance to change as one of the challenging factors that threaten their livelihood (Haddara & Moen, 2017).

To deal with the resistance to change that is normally brought up by fear from users, the company leaders should talk constructively with employees. Engaging employees could be used to educate potential users about the benefits of ERP, in most cases ERP projects fail because of the lack of communication. Managers should address issues once they pick them up (Haddara & Moen, 2017).

Other causes of ERP failures might include lack of training or insufficient documents by the training team. Also, the habits of the employees play a major factor. According to Silva (2012:230) implementations of ERP often fail to meet the expectation and evidence suggest that around 75%

of implementations fail to fulfil set objectives. ERP researchers need to find out and explore the reasons behind these failures and poor performance in implementing ERP projects.

There are many challenges that SMEs face when implementing an ERP solution. According to Gogulladass (2020) the following diagram on figure 2.9, details the challenges of implementing ERP in SMEs.



Figure 2.9: Challenges faced by SMEs in implementing and managing

2.10 ERP in SMEs

After the success of implementing ERP in a large organisation for years, that encouraged ERP vendors like SAP, Oracle, Microsoft, etc. to enter the SME market segment to increase their customer base (Mareai, 2013). According to Sedera et al (2013), the vendors use the below benefits to encourage SMEs to adopt ERP.

1. E-commerce benefits: Ability to avail product and product information quicker to the customer.
2. Cheaper and faster internet: seamless internet connection via mobile devices, and that reduces the cost further.
3. Cheaper hardware and software: With the progression in technological innovation, the cost of both software-like databases and hardware in the form of servers, cables, switches

etc declines, with the introduction of hosting services and most SMEs ERP being cloud base.

Implementation of ERP in SMEs requires a special and accurate implementation strategy to avoid failure because of a number of reasons in the design of an SME business (Haddara,2013). The implementation of ERP systems in SMEs is not a duplication of the implementation experience of the larger organisations since most SMEs have different characteristic features that must be explored (Domagala et al, 2021).

2.11 ERP functional requirements by SMEs

ERP continues to be implemented and adopted worldwide by many organisations and it has become an essential part of organisational practice and success guiding operation activities of many organisations (Mufeti & Smolander, 2017). In the past, ERP was mostly adopted and implemented by large organisations, however now they are being adopted by companies of all sizes, including SMEs (Mufeti & Smolander, 2017).

According to Mufeti and Smolander (2017), ERP is not a one-size-fits-all solution, because companies are of different sizes and qualities do not have the same characteristics. ERP functionality required by SMEs varies from one organisation to another, however, each business has its unique processes, and to implement an ERP system seamlessly business should streamline their business process. ERPs for SMEs in the market all share the same basic modules as their core (AFON, 2021). The diagram below shows the common core modules of an ERP system.



Figure 2.10 - ERP Independent Modules

Source: (AFON, 2021).

The different modules of ERP perform and have different functions within the organisation and are an integral part of how the business should run (AFON, 2021).

2.12 ERP selection for SMEs

According to Panorama (2020), potential buyers of ERP applications have hundreds of systems to choose from, and many of the ERP vendors provide a wide range of capabilities and have industry-specific business processes built into their software offering. Panorama (2020) classifies the ERP systems using four tiers namely:

- Tier 1 – The systems are designed for an organisation with more than \$750 million in annual revenue, and most of these enterprises are complex, either due to complex operational processes or complexity in the entity and consolidation needs. Tier 1 addresses multiple industries and scalability such as Microsoft Dynamics 365, IFS, Sage Enterprise Management suite etc.
- Tier 2 – These ERP systems serve small to medium sizes with \$250 to \$750 million in revenue. Organisations of this type constitute multiple industries and multiple business units, such as Infor CloudSuite Industrial, Infor CloudSuite Distribution, NetSuite, Abas, etc.

- Tier 3 – There are hundreds of software providers in this tier, and most of them serve smaller organisations. Some are used to supplement the larger ERP systems such as SAGE ERP 100, ERP 300, Aptean, ECI and ASC

Many companies are looking at their future needs. Therefore, they are looking for a vendor that does as well (Panorama, 2020). When selecting ERP systems, organisations need to consider what functionality they will need in the next five years (Panorama, 2020).

According to Panorama (2020), a clearly defined digital strategy and understanding of business goals, organisations can determine if a particular vendor would be a good choice in the long-term, e.g., if the vendor is likely to move into the Artificial Intelligence (IT), that could be beneficial to the company, or Internet of things (IoT)

Panorama (2020) also identified that as an organisation grows, there must be a system in place that can meet their needs and support complex operations. This includes software upgrades, sometimes a total replacement of legacy systems that is the poor fit for their business. Panorama (2020) study found out the below ERP selection decision:

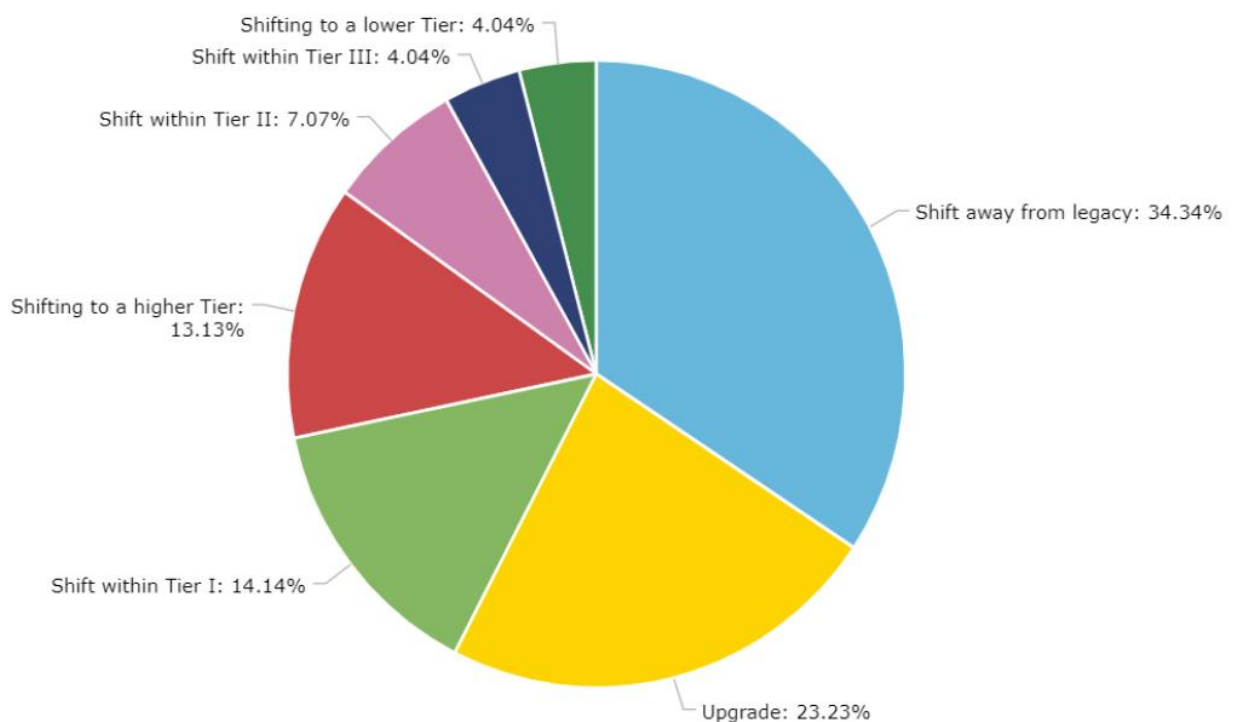


Figure 2.11 - ERP Software Selection Decisions

Source: (Panorama, 2020).

According to Panorama (2020), organisations shift away from legacy systems because they want to keep up with the competition, and in most cases, legacy systems fall short in terms of functionality, and it becomes a challenge when integrating with other systems.

Organisations implement ERP because they want to improve work efficiencies and reporting, and ERP systems are developed to fit into the standardised business process (Panorama,2020).

According to Panorama (2021), several criteria should be considered in the selection of an ERP system:

- Organisational Alignment – Acquiring an ERP system will help an organisation to achieve business objectives.
- Technical Fit – It is important to have IT capacity within the business, users should understand what servers, databases, and PC, that will be required to support an ERP solution.
- IT Strategy – Organisation needs to understand how the ERP system aligns with technology and infrastructure in the IT department.
- Cost – Organisations need to validate the cost and ensure that the cost of the ERP project is clear and visible item by item.
- Vendor Liability and Level of Service – organisations need to ensure that they deal with ERP software providers who have a track record and will be around to support the business in the future.

References – Vendor's customers can be of great help in evaluating the vendor's product, including support and services.

2.13 The ERP pre-implementation considerations for SMEs

According to Mufeti and Smolander (2017), ERP continues to be implemented and adopted worldwide by many organisations and it has become an essential part of organisational practice and success guiding operation activities of many organisations.

According to Hustad and Olsen (2014), the cost of a failed ERP implementation can be very costly, especially for SMEs, since the poor outcomes of the implementation can wipe the existence of the SME. To ensure a successful ERP implementation, SMEs should focus more on critical actors involved in the implementation process as well as be aware of some challenges that might arise (Al-fawaz et al, 2021). SMEs have limited human resources and internal IT competencies on-site as compared to a larger organisation (Hustad & Olsen, 2014). Because SMEs lack critical skills, sometimes they face challenges with configuring ERP systems and lack

of internal capacity and expertise about how to implement and organise organisation-wide projects such as an ERP project, hence they need to rely on external consultants and support from ERP software vendors to implement the ERP project (Hustad & Olsen, 2014). A limited number of SMEs have the required skills internally for implementing and configuring the ERP system. However, they usually depend mostly on external consultants to implement and internal resources to support post-implementation.

According to Hustad and Olsen (2014), the SME setting unlike large enterprises, they have severe resource-constrained, such as lack of resources, competence to carry out companywide IT projects, Also, they have limited financial resources which means that such companies cannot afford to fail, including project cost overruns that are normally felt by big enterprises.

Saxena and McDanagh (2020) explains the study conducted by J. Verville and Halington on pre-implementation and came up with a six-staged model that illustrates the ERP Acquisition process (MERPAP). Figure 2.12 shows the model that is made up of processes: Planning, information search, selection, evaluation, choice, and negotiations. The processes interrelate with each other, and all sub-processes are interactive in nature, except from sub-process 'choice' where the decision to acquire an ERP is taken.

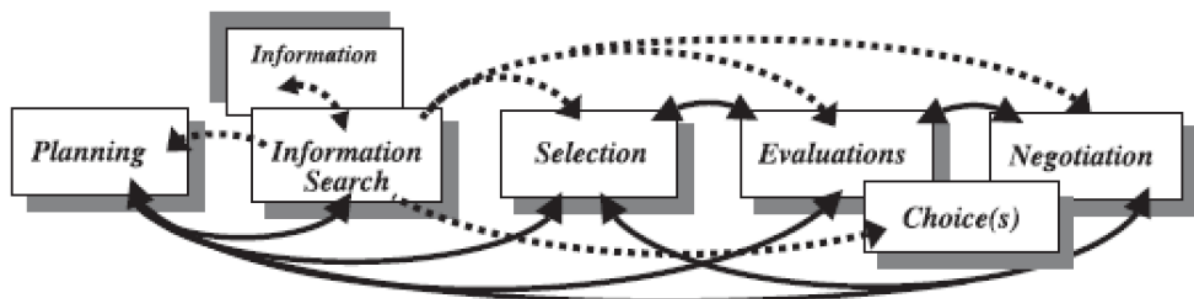


Figure 2.12 - Model ERP acquisition process (MERPAP).

The dotted line in the Figure 2.12 indicates the flow of information between the processes. the solid recursive arrows between the processes and the planning process indicate the on-going nature of activity/feedback/adjustment/input between them.

Research conducted by Salum et al (2015), in the Middle East companies found that pre-implementation preparation was heavily influenced by the Chief Executive Officer (CEO), and top management was not ready to implement business process re-engineering (BPR) to adjust and modify business rules by the ERP system. Salum et al (2015), also found that even after recommendation, the company owner did not want to recruit IT personnel for administration and

maintenance of the ERP system, the top management failed to delegate responsibilities effectively and top management reduced total training hours for the staff to cut costs.

According to Salum et al (2015), the reason for the unsatisfactory ERP implementation was because of company culture and the management approach, the autocratic management style led to unsatisfactory ERP implementation, and not recruiting an adequate number of IT personnel, not providing adequate training to staff, not delegating some authority to lower-level management contributed to unsatisfactory results in the post-implementation phase. This shows misalignment between management and actual workers who will be using the ERP system daily in the organisation.

According to Singh et al (2016), he recommends that before implementation, an organisation should develop a project structure that includes specific roles such as, *executive sponsor, project leader, process owners, super users, vision, planning team* and *implementation team*. The executive sponsor ensures that the implementation receives necessary attention and support to succeed, the project leader manages the project and other issues to do with business, technology and organizational change, process owners take responsibility for how the process fits in with the ERP processes, super users assist with the testing of the system to ensure usability and then train other users and, the vision and planning team take care of the overall fit between the ERP system and the organization. The implementation teams develop process designs, system configuration switches, and training plans.

2.14 The ERP post-implementation considerations for SMEs

The introduction of a new information system into an organisation with everything being equal should deliver multiple benefits, achieve the set management objectives, and achieve the desired return on investments. According to Lee and Chang (2020), in most cases, ERP system post-implementation becomes a challenge when the perceived benefits have not been realised due to a lack of understanding by managers of what these systems are about. With the introduction of the ERP system in an SME, the needs of the organisation and the features that make the organisation unique may be lost or eroded in a way that is not understood and controlled by managers (Lee and Chang, 2020). Lee and Chang (2020) contend that in most cases, after implementing the ERP system, the system ends up leading the business rather than the business leading the system, this point is also emphasised by Rocha et al (2021) in earlier studies on leveraging the 'enterprise maturity curve' to reduce high risks and costs of implementation. An organisation needs to take total control of the ERP system agenda today and in the future to a much greater extent, thereby increasing the benefits expected from ERP (Lee and Chang,2020)

According to Campagnolo (2013), some vendors and consultants are soft peddling the term ERP because of bad experiences and management's unhappiness and frustrations, when the original business objectives and benefits are not realised during ERP implementation. The compromises during the design phase and rushed project timelines of the ERP project had a negative impact on the performance of the system, and they also affect the benefits that were not communicated clearly from the start (Campagnolo, 2013). Ghani et al (2019) also asserts and supports Campagnolo's argument by stating that *"organisations have future designs developed from a clear understanding of business requirement will gain more vision and value from their ERP implementation"*.

The assessment of an ERP system solely depends on the organisation's intention to use the ERP system to achieve its strategic objectives (Justyna,2012). SMEs unlike large organisations do not have the appetite to invest massive resources in an ERP system project, therefore implementing ERP right the first time is very important. The defined indicators should improve during the post-implementation phase, as the company develops new functionality and users are exposed to a more system-driven process, this making the ERP system the backbone of the business (Haddara,2015).

ERP literature implementation models often exclude the post-implementation activity phase (Krailjic, 2014). During ERP system post-implementation, the CIOs, managers are more worried about the implemented ERP solutions and ensuring that all the patches are received for identified bugs or legal changes which impact the ERP functionalities (Domagala et al, 2021). Every few months ERP providers release patches for identified system bugs, some consist of new functionality (Domagala et al, 2021). Depending on the ERP vendor, every few years, a new software version is released and the SME is required to upgrade to a new version of the system, the upgrade for cloud, hybrid is normally managed by the provider, however, on-premises is handled in collaboration with the organisation (Domagala et al, 2021). The upgrades are mostly provided in packages, the scope and the versioning help the organisation to keep the ERP system in a supported version, while functional upgrades refer to functional process improvement (Domagala et al, 2021).

Maintaining business continuity, and to avert the risk of downtime companies should constantly develop and adapt the system to business needs. ERP post-implementation phase activities are made up of maintenance, corrective, adaptive, perfective, preventive and user support [39]. According to Domagala et al (2021), the delay of errors, and negligence in the maintenance phase leads to the necessity of re-implementation, instead of an upgrade which is more costly for SMEs. According to Domagala et al (2021), the ERP market saturation constantly shows that there are fewer new implementations, making the post-implementation phase very important.

2.15 ERP implementation failures and cost overruns in SMEs

2.15.1 ERP implementation cost overruns in SMEs

The amount set aside by SMEs towards ERP budget means that the ERP software is often a bigger cost item than for larger companies, even though they pay the least cost per user as compared to larger organisations and ERP software carries a bigger financial risk for SMEs than for bigger enterprises (Domagala et al,2021).

According to Panorama (2015), small companies spend a lot of time and money in implementation without realizing the expected business benefit, and the mistake made by small companies is that they think ERP system implementation will be simple and cheap. The other issue is under-budgeting, not scaling for future growth and not adequately defining business processes and requirements that will take them into the future (Panorama, 2021). Most small companies experience cost overruns because they neglect organisational change management, change can be very challenging for small companies since they are nimble and not used to the discipline required by ERP systems, and critical project activities such as training communication and organization readiness are mostly neglected to lead to further handholding by consultants and resulting in further project cost overruns (Panorama,2015).

According to Panorama (2020) research, organisations that competed in their implementation, more than 62% completed their projects at or under budget, this is an increase of 7% from the year 2019. This could be the fact that most organisations focused more on business process management since a lack of business process management can increase customization needs, which is an unexpected cost that can arise during ERP project implementation and beyond (Panorama, 2020).

Panorama (2020), states that organizational issues are the primary cause of budget overruns, the most common budget overrun reasons are depicted in the graph below.

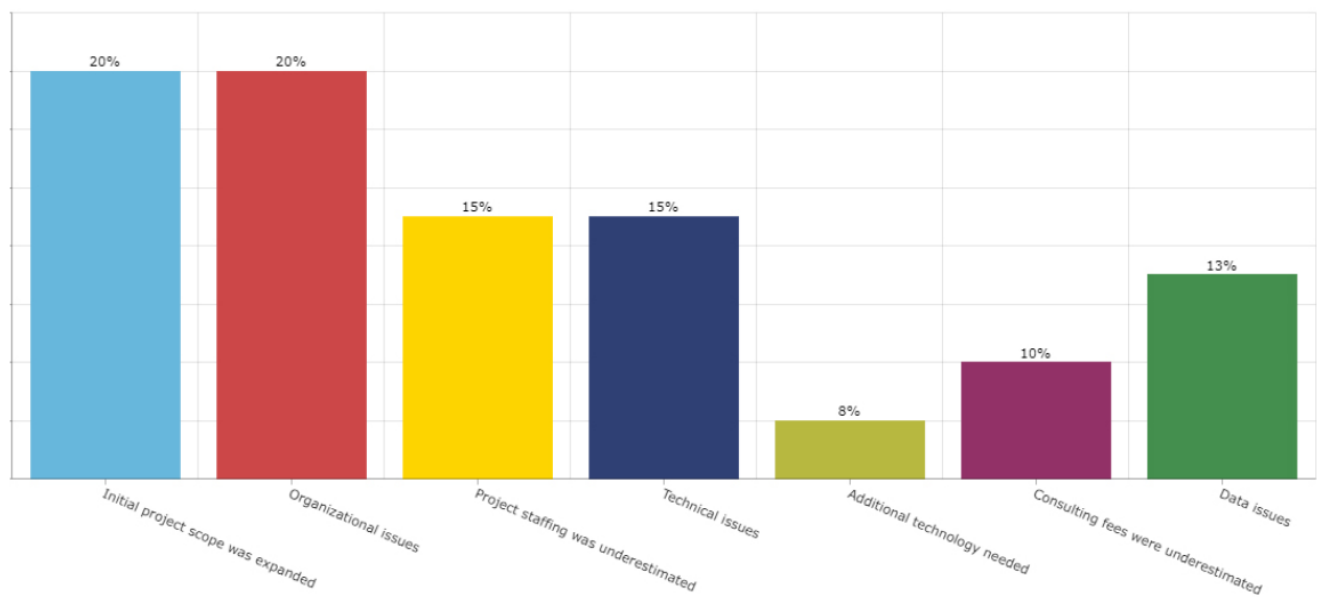


Figure 2.13 - Reasons for ERP project cost overruns

Source: (Panorama, 2020)

2.15.1.1 ERP implementation Failure(s)

According to Panorama (2020), the major cause of ERP failure is the lack of business case and benefit realization plan, the research performed by Panorama consulting group mentions that organisations should define metrics of how they expect the new ERP system to improve their business and ensure that their investment is not wasted.

2.15.1.2 Notable ERP implementation Failure(s)

ERP implementation failure is a common occurrence among many companies since the introduction of ERP systems, most of the failures are more process, and organisational issues instead of the system itself. Below is a list of ERP systems implementation failures that had an enormous negative impact on the organizations presented by Fruhlinger et al (2020).

1. Leaseplan - is an international company of Dutch origins, specialised in automobile leasing and fleet management after successful implementation at its Australian subsidiary, in 2016. The company continued to develop an SAP-based core leasing system (CLS) that was to be the heart-beat of the group IT transformation, however, auditors warned against user access and change management issues. Leaseplan abandoned the project months later and wrote off \$100 million in project costs, and more million in restructuring and consulting fees. After months in the project, LeasePlan mentioned that the CLS system would not be fit for purpose in the emerging digital world in their area of operations.

2. MillerCoors - MillerCoors was a beer brewing company in the United States. The company ran different instances of SAP ERP software after industry consolidation, in the quest to streamline, the company hired Indian firm HCL Technologies to implement a unified SAP implementation that would serve the entire company. However, the first roll-out had 8 'critical' severity defects, 47 high severity defects, and thousands of additional problems during the hyper care go-live period. MillerCoors sued HCL claiming that HCL had inadequately staffed the project and failed to deliver on their promises. HCL also sued MillerCoors claiming the brewer was blaming them for their management dysfunction, which HCL cited as the real cause of the implementation failure.
3. Revlon - is an American multinational cosmetic, skincare, fragrance, and personal care company. After the acquisition of Elizabeth Arden, Revlon found itself needing to integrate the process in 2016. Both companies had positive experiences with ERP implementation in the past. The ERP failure cost Revlon millions in lost sales. The company blamed 'lack of design and maintenance of effective controls in connection with the implementation'. This caused the company to incur shipping fees and other costs in connection with the company trying to remediate the decline in customer service levels which could continue until the ERP issues were resolved.
4. Woolworths Australia – After the SAP implementation the profit and loss report developed for individual stores, which managers were used to receiving every week, couldn't be generated for nearly 18 months. The problem was the change in the data collection procedure; however, the root cause was a failure of management to fully understand their processes. The day-to-day business processes were not well documented, and senior companies left during the 6-year transition process; all the institutional knowledge was lost.
5. Target Canada – is the Canadian subsidiary of the Target Corporation, the eighth-largest retailer in the United States. The company decided not to migrate the data into the new ERP system, this process could have highlighted issues with database table misalignment, however, they decided to input new information directly into the ERP system. Upon Go-Live, the company supply-chain collapsed, and they found out that the new data was riddled with errors, items with incorrect dimensions, supplier, prices etc. the data was put into the system by entry-level employees with no experience. The company discovered that only 30% of the input data was correct.

2.16 Change management for SMEs

Change management is important when implementing an ERP system in both SMEs and large enterprises. This process prepares management and direct ERP application users for the

adoption of the ERP system. Change management attempts to make it seamlessly easy for SMEs to adopt ERP. However, some challenges exist in SMEs during these processes that are unique from large enterprises.

2.16.1 ERP change management strategies for SMEs

Change is a difficult complex task in any organisation according to Bugubayeva et al (2017). According to Bugubayeva et al (2017) for a large system change, there needs to be a change strategy in place, the plan should contain defined processes that focus on what intervention to make, where, by who and what time. According to Bugubayeva et al (2017), there are several steps that the management of any organisation should consider implementing a major system change:

1. Developing a plan
2. Providing a vision for the future
3. Leadership to articulate the vision and deliver on the implementation of the plan
4. Communication of the vision and details of the plan to all stakeholders
5. Gain support for the plan
6. Put the appropriate arrangements in place to facilitate implementation
7. Implement the changes while at the same time continuing to provide a service
8. Embed the change in the organization

According to Bugubayeva et al (2017), taking organisational communication for granted is not for the benefit of the organisation thus organisations need to plan for communication of the changes process and monitor it.

Bugubayeva et al (2017), advise enterprises to identify important factors of consolidating and sustaining the changes, which will require continuous monitoring, follow-up meetings and reviews so that the staff feel the support from management to cope with changes in the workload and resource allocations.

2.16.1.1 Types of Change

Doppelt and McDonough (2017) there are two basic types of changes on an industrial level.

- Incremental change. – it's a change that comes out of an organisations bird's eye view of its business environment which leads to small adjustments in introducing new services or products, or from process improvement initiatives.

- Discontinuous change. – This type of change emanates from a significant change in the business area that changes the base of competition on a fundamental level.

Any of the above-mentioned changes can be part of an ERP implementation scenario but may require. With an incremental approach, skill, personnel and system while discontinuous change will affect strategy, structure, and shared values (Doppelt & McDonough, 2017).

2.16.1.2 Managing change

According to Doppelt and McDonough (2017), the implementation of a new information system will influence the business process, individuals and the dynamics in the organisation. If the change is not well managed within an organisation, resistance to change will mostly occur and the change might likely fail. Doppelt and McDonough (2017), further present two areas of change that will have to be considered and be given great attention that is where change management consists of an approach working with processes, structural, technical, and staff and personnel changes within the organisation. The other approach is the business transformation which involves fundamental changes to the organisational processes to improve the organisational performance (Doppelt & McDonough, 2017).

2.17 Research gaps

Studies have been conducted in the past to investigate the challenges encountered when implementing ERP systems in large organisations, there has been very low research in investigating challenges encountered in implementing ERP in SMEs. The fact that most ERP projects experience cost overruns and have the potential of affecting the bottom-line of any organisation causing serious financial challenges in the long run. Most organisations large and SMEs underestimate the complexity of implementing ERP systems, which requires a lot of process attention, skills, and budget to implement the actual project. While fewer studies have identified the challenges of implementing an ERP in an SME, the identified challenges are not clearly depicted. Understanding challenges experienced during the implementation of ERP in SMEs is very critical since it will allow the organisation to develop a coping mechanism for dealing with the challenges.

As discussed in the literature review, most research has been conducted in large organisations, and there has been less research conducted in all phases of ERP implementation in SMEs especially in the emerging African context. ERP implementation is not a static process, it keeps on changing, and improvements are made all the time, it is important to understand different challenges that different organisations experience when implementing an ERP, in SMEs within the African context, and also to understand how the varying challenges interact with each other

to influence the implementation results. There hasn't been any extensive research conducted within the African context, especially in South Africa looking at the challenges of implementing ERP in SMEs. The focus of this research we will look into the challenges of implementing ERP systems in SMEs, through all the implementation phases such as Pre-implementation, Implementation and Post-Implementation.

2.18 Chapter summary

Implementing an ERP system requires a holistic approach from all stakeholders involved. As indicated in the literature review, implementing an ERP system is a daunting task for many organisations, specifically for SMEs because of their budget constraints. The literature review reports comprehensively on the challenges of implementing an ERP system in an SME and looked at the definition and types of SMEs across the world, including the ICT requirement to effectively implement ERP systems. Many organisations including SMEs have underestimated the impact of change management user acceptance to change, and overall stakeholder (Executive, Management and low-level employees) involvement when implementing an ERP.

With many ERP projects failing some experiencing cost overruns, the impact of top management and the exclusion of low-level employees cannot go unnoticed. ERP systems differ in complexity. However, the underlying processes are determined during blueprinting in the Pre-implementation phase. Additionally, other challenges identified in the literature include user resistance, inadequate requirements, inadequate training, user involvement in the pre-implementation phase, lack of communication, cross-functional challenges as well as change management. The challenges should be taken very seriously by SMEs when implementing ERP solutions.

3 Chapter Three: Research methodology

3.1 Chapter overview

This chapter details the research paradigm, methods, and methodologies. The chapter also unpacks and provide details into the research methods applied during the data collection, the tools, techniques used for data analysis and detail the limitations to the study.

3.2 Research paradigm

According to Antwi and Hamza (2015), qualitative research applies an interpretative, subjective epistemology and inductive approach. In addition, qualitative data relies on non-numerical data collection methods, such as interviews, pictures and the focal point being the understanding of reality through words. Unlike quantitative research that focuses on many samples for generalisation of findings, qualitative research does not intend to generalise on the research finding, however, it focuses on account subjectiveness of the participants and particular findings.

The main aim of this study was to explore the challenges related to implementing ERP and explore the factors that cause these challenges in SMEs. These challenges that are explored can be achieved through qualitative research methodology. The researcher had to interact with participants to get an extensive understanding from a social perspective. The researcher obtained insight about the phenomenon from those who are affected by it, and this provided the researcher with the opportunity to study the details further. The study did not intend to generalise on the findings, rather the researcher intended to provide a detailed study to provide answers to the research questions. A qualitative methodology was used to collect thoughts from different participants through detailed analysis of experienced accounts collected from a comparatively small number of participants (Mohajan, 2018). Qualitative research follows an interpretive philosophy, which is also known as anti-positivism, while quantitative research is informed by positivism (Sahay, 2017).

3.3 Research method

The research method is divided into qualitative and qualitative. The differences between the two methodologies are given in the table below (Bailey et al, 2011).

Table 3.1 - Research Methodologies

Factor	Qualitative research	Quantitative research
Objective	To get an in-depth understanding of causal reasons, drives and beliefs	Make conclusions to a wider population through quantifying data and extrapolation.
Purpose	To understand why and how to study the process, influences and context	To quantify and measure a problem. How much? how often? And to discover the relationship in the data.
Data	Textual data	Numerical data
Study Population	A small number of interviewees	Large representative sample
Data Collection Method	In-depth interviews, observations	The survey, opinion polls
Analysis	Interpretive	Statistical
Outcome	To develop and improve understanding, to recognise behaviours and their causes	To identify data patterns, to find prevalence and averages

This study followed the qualitative research approach to explore the challenges related to the implementation of ERP systems in SMEs. This approach helped the researcher in answering the research questions and exploring, highlighting and as well as addressing the SMEs ERP challenges. This study followed a qualitative research approach, which applies an interpretative approach. The research aimed to interpret and understand factors and challenges that affect the implementations of ERP systems in SMEs using qualitative methods allowed the researcher to be part of the data collection process, directly interact with research participants in their environment, and explore details further.

3.4 Research design

Given the objective of this research to develop an understanding of the challenges related to the implementation of ERP systems in SMEs, an exploratory study was found to be suitable for the researcher to answer the research questions.

According to Saunders et al (2012), exploratory study results in a range of causes and alternative options for a solution to a specific problem. Utilizing exploratory study, the researcher was able to obtain insights and details from Analysts, Super-users and management/supervisors on factors and challenges that affect the implementation of ERP in SMEs. The exploratory study employed the use of qualitative methods of investigation so that the participants could submit the answers that bring new understanding. The study was conducted to discover new concepts and find new knowledge and understanding.

The Figure 3.1 below summarizes the research design approach employed in this research:

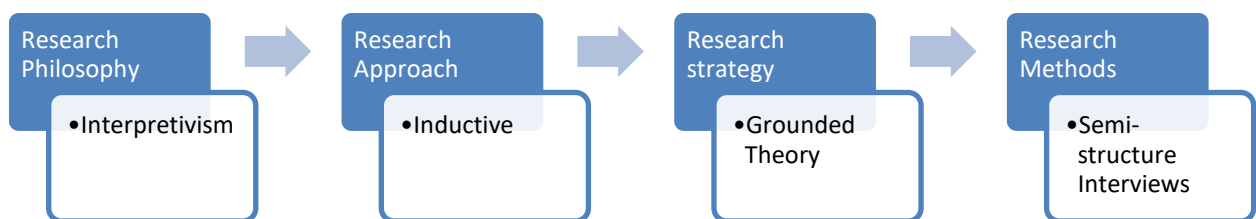


Figure 3.1 - Research Design Approach

3.5 Population and sampling

3.5.1 Population

The population was selected from two SME companies, this included business analysts, managers/supervisors (middle, lower level) and super-users. Business analysts were selected as a result of being involved in the end-to-end implementation of ERP, managers/supervisors from an overseeing perspective and super-users as users affected by the implementation. Choosing this sample population was to ensure that the researcher gets valid, valuable insight and

perception from different participants. Those excluded from this study would not add any value to the context or influence the study in any way. The designated companies are classified as SMEs with business units across South Africa. The organisation was selected because they recently rolled out an ERP system in their business units.

The Chief Information Officer (CIO) of company A and manager of company B were approached before for permission to conduct the study. The initial contact was established by the researcher since the researcher previously collaborated with the two senior managers. The managers were briefed about the interview process steps and assisted in identifying capable participants to be interviewed. The two selected companies were very welcoming to the researcher, although some challenges were experienced with securing time with the participants, the managers remained supportive.

3.5.2 Sampling method

According to Kabir (2016) sampling is defined as a process the selecting a certain segment/sub-group from a group or population that represent the entire population. According to Saunders et al (2012), sampling techniques provide different methods that enable the researcher to reduce the amount of data that is required by only considering only data from sub-group rather than many cases. For this study, the researcher considered non-probability sampling, for this study the researcher considered purposive sampling. Purposive sampling participants are selected by the researcher from their sampling frame because they have characteristics that the researcher requires (Pressbooks, 2014).

To answer the research questions, the intention was not to generalise on the results, rather to ensure that most of the respondents are chosen and are knowledgeable about the topic in their context and are seen as a value-add to the study. The sample size of the study was determined when the saturation point was reached. According to Saunders et al (2018), A saturation point is reached when adding more participants to the study does not result in new information but rather more repetitive data.

The sample investigated was ERP users, business analysts and supervisors who work in South African SMEs. The expected sample was expected to come from two companies, and the research sample was chosen based on the following criteria:

- More than 5 years working with ERP systems
- More than 5 years' experience in ERP implementation in SMEs.

3.6 Data collection instruments

This study used semi-structured, open-ended, face to face interviews to collect views and opinions from the participants. The interview questions focused on the challenges of implementing ERP in SMEs. According to (Dumay, 2011) there are types of interviews, structured, semi-structured and unstructured interviews. Unstructured does not follow a form of structured questions; rather it follows a discussion and structured interviews

When using the semi-structured interviews, the research questions are taken into consideration when developing interview questions and allow the researcher to ask the participants for more elaborate responses. Semi-structured interviews are made up of a series of open-ended questions related to the research topic. The openness of the question gives the researcher and the participants an opportunity to explore responses in more detail (Saunders et al,2012).

Semi-structured interviews were suitable for this research and made it easier for the researcher to answer the research questions, and since the objective of the research was to develop an understanding of the challenges affecting the implementation of ERP systems in SMEs. During the interview, the researcher interviewed people from different levels of the organisation that means that some of the must be considered to shift little towards unstructured since some questions had to be fitted for each person in order to gather as much information as possible about the challenges of implementing ERP in SMEs.

3.6.1 Data collection

The data collection process was started by setting up appointments with the respective participants. Different mediums of technology to collect the data, such as Zoom, Google Meet and Otter.ai was used to record all Google Meet Interviews and used for automatic transcription of Google Meet meetings. In One interview Zoom was used and the data was recorded and transcribed manually. These mediums were used because we are in an era where covid-19 prohibits human physical interaction. The data collection process started with a pilot research instrument. According to Aljiff et al (2017), a pilot is carried out with a small sample of research participants that share the same characteristics as the population being studied.

The first part of the interview schedule provided a background of the research, including an introduction and research objectives. This section of the interview schedule allowed the participants to gain an understanding of what the interview is about. The second part of the schedule focussed much on the managerial aspect of Enterprise Resource Planning systems pre-implementation.

Before interviews, the participants were assured of anonymity. The interviews with various participants were recorded and key takeaways were noted down during the interview. The interview duration varied depending on the insight and information that the participant was willing to divulge.

The respondents of the interviews were selected in collaboration with the CIO and CEO of the company where the interviews were conducted. This was done to ensure the cooperation of all their respondents. The respondents were informed and a google meet meeting invite was scheduled for the interview.

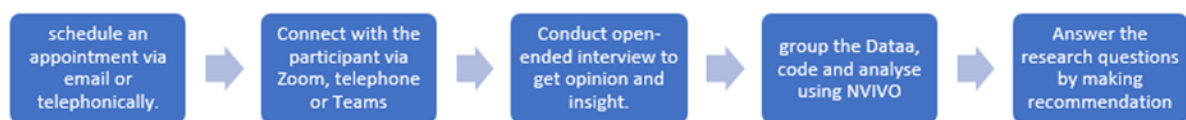


Figure 3.2 - Data Collection Process steps followed in this study

3.6.1.1 Data coding and analysis

The data analysis was based on the qualitative procedure. Analysing the data collected, the aim was to answer the research questions and satisfy the aim of this study.

Coding is a qualitative procedure or inquiry, most often using a word or a short phrase (Saldana, 2013). The researcher can use pre-determined coding schemes or review the initial correspondence to construct a coding scheme based on major categories that emerge.

Saunders et al (2012) argue that there is no standard procedure for data analysis. However, the researcher, in this case, had to group, summarise, and interpret the data to draw correct insight. The process of data coding and analysis will follow the steps below:

- summarise data by reducing long sentences into shorter-worded sentences.
- group data into sections of the same meaning.
- Formulate themes from the data.

The data collected was transcribed using otter.ai, and the transcripts were analysed using Atlas.ti qualitative research software to categorize and establish themes.

3.7 Trustworthiness

the study assessed trustworthiness by following the below quality criteria in qualitative research by Korstjens (2018):

- Credibility, trust, and confidence can be placed in the truth of the research findings. Credibility establishes whether the research finding represents correct information.
- Transferability, the level at which the results of qualitative research can be transferred to another context.
- Dependability involves participants' evaluations of the findings, interpretations and recommendations.
- Confirmability is interested in demonstrating that data and interpretations of the findings are not figments of the inquirer.
- Reflexivity is the process of critical self-reflection about oneself as a researcher, relationships between researcher and the participants.

3.8 Ethical considerations

During the interview process, the experience of the interviewees in projects was considered and discussed extensively. Only the research interview questions were discussed and avoided the discussion of sensitive topics. The interview was designed in a way that

Below are the ethical principles that will guide this research, to its full completion (Laerd, 2019)

- Minimising the risk of harm, the research should not harm participants. Where there is a probability that participants could be harmed or put in an uncomfortable position there must be a strong justification for this.
- Obtaining informed consent, participants should understand what they are taking part in research, what is required from them, as well as associated demands.
- Protecting anonymity and confidentiality, the information of the participant should be confidential, and anonymity must be kept.

Avoiding deceptive practices, the research must be clear to the participant unless it is covert research.

3.9 Chapter summary

The aim of this study was to investigate, interpret and understand the pre and post challenges that are encountered when implementing ERP in SMEs. The chapter discussed the research methodology and design that was adopted in the study to achieve the aims and objectives. The

chapter elaborated on the research philosophy adopted, as well as the interpretive model implemented in the study. The data collection process was discussed in detail, and ethical considerations considered in the study were explained.

4 Chapter Four: Presentation of the findings

4.1 Chapter overview

In this chapter, the researcher presents findings from all the process methodologies and procedures explained in the previous chapter. The researcher conducted the study to generate and collect data that is central to my study and that seeks to answer my research questions. The existing literature on enterprise resource planning is detailed and presented in the literature review and the aim of the study was unpacked in chapter one (1) of this study. Since participants in this study have been with their companies for a while and they have gone through a process of a number of ERP implementation rollouts within their respective organisations, they are expected to be familiar with the principles and procedures of the data collection process to be able to be objective and give informed analytic and critical views.

4.2 The importance of the findings

The findings of this study will assist SMEs in knowing what challenges to expect when implementing an ERP system, and how to avoid them. The study highlights the challenges faced by SMEs when implementing ERP systems. The primary expectation of this study is that its contribution will highlight new and elaborate the importance of an ERP system in SMEs and also highlight the actual challenges that SMEs face when implementing an ERP system. This study highlights pre and post-implementation challenges that the implementation SMEs needs to take note of and avoid. It is expected that this study will provoke thought and promote further research on this relevant topic.

4.3 Findings from interview data

4.3.1 The response rate of the participants in interviews

The participation that the researcher received from the two selected companies was fairly encouraging, and the communication with the managers was open and honest. The proposed agreed number between the two companies was fairly achieved, even though there were various challenges with interview postponements, participants eventually agreed to a set time and date for the interview. The researcher managed to interview business analysts, supervisor's, and system users. Having a variety of designation gave me the ability to explore the rich experience of each participant since they viewed the ERP system from a different perspective. Company A availed 4 respondents, while Company B availed 2 respondents.

4.1 - Participants Position, Industry and ERP used

Company Name	Username adopted for the Study	Position	Number of Participants	ERP in Use	Type of Business
Company A	MA1	Business Analyst	1	SAP	Supply-Chain
Company A	MA2	Business Analyst	1	SAP	Supply-Chain
Company A	MA3	Warehouse Manager	1	SAP	Supply-Chain
Company A	MA4	Supply-Chain Supervisor	1	SAP	Supply-Chain
Company B	MB1	Business Process Analyst	1	SAP	4PL Logistics
Company B	MB2	Consultant	1	SAP	4PL Logistics
Total			6		

Access to participants and reception at the permitted companies was met with clear honest responses since the researcher had a previous working relationship with the company's managers in my previous consulting life. There was no gate-keeping my request was received and the researcher was given access to respondents, even though they only provided limited respondents citing their busy period towards the end of the year.

4.3.2 Sample presentation of the semi-structured interview data

Question 1: *Do you think your ERP system is usable, or user friendly? and why do you say so?*

The first question seeks to identify the challenges or the issues that the users are experiencing when utilizing the ERP system to conduct day to day business transactions. This question helps us identify challenges related to the system customizing a process alignment to the system.

a) Responses from Participants

Company A

MA1

“Yes, it is usable. It is usable because it's, it allows us, to use a system on a daily basis, and the fact that you know you can train somebody on the system in order to make sure that they understand the system and to make sure that the customers in orders are processed as it needs to be processed so on the SAP side you, we are able to invoice customers. So, did they acknowledge receipt of goods, we are able to monitor any reports, we are able to download reports. So that analysis can be done. So there are various ways that the current system can be used, and yes, it is user friendly as I mentioned in my opening statement that anybody can be trained on it and once you train somebody, only they can use it independently.”

MA2

“Honestly, our ERP is usable and friendly especially now that we've got the new technological application called SAP HANA, which reduces most of the clicks for users as compared to the old ECC system, so, it gives the user comfort of a user friendly. So, I would like to think that is user friendly.”

Both participants are highlighting that their current ERP system does work for their SME company, and they are able to perform their duties with no issues, and also participant **MA1** notes that it is quite simple to train new employees on their system.

Question 2: *What factors do you think would lead to a successful ERP implementation?*

The question tries to find out what factors SMEs should consider when implementing an ERP system. It explores pre-implementation factors, implementation factors as well as post-implementation factors to ensure a seamless implementation. These are the factors that could hinder a seamless implementation of an ERP package.

b) Responses from Participants

MA1

"I think it starts with the people right. If you are implementing a system yes you can implement a system that you think will work but at the end of the day, the people need to work with it. So, if people understand the system, then yes, it will be definitely a very successful implementation, as well is the fact that when you implement a system, it needs to be in line with the business process so if the system does align with what the business processes do on a daily basis, then you are ever successful implementation."

MA4

"I think a clear understanding of the scope. What is that sort of project understanding what exactly do you need your ERP system to cover in terms of what are the benefits? And does it suit your business? And does it allow you to perform an efficient or run an efficient business by the use of the ERP system? Is it cost-effective to maintain it based on the performance of your company as well? The scope is going to be in line with your company and the operations."

Participants **MA1** here were emphasising **stakeholder buy-in**, **business process alignment**, and **MA4** highlights **understanding of the project scope**, business **integration** and the **cost** to maintain the ERP as factors to consider for a successful implementation.

Question 3: What factors are considered in the selection of an ERP package?

This question explores the factors and the motivation that SME organisations use to select an ERP system and find out what was considered, who was involved, who were the key players and why was the decision taken. Also, to find out what steps were followed in the selection process and find out what could have been done better to ensure a smooth transition and selection of an ERP package.

c) Responses from Participants

MA1

"I wasn't much involved in it yes; there was communication about a new system that would be implemented at the time. But I think that it wasn't implemented, or a lot of things were not considered before a selection was done. I think it was purely poorly considered, if I may put it this way because firstly, other departments were not involved, that's point number one in the new implementation because there needs to be an integration amongst departments, and

unfortunately when the system was implemented it was only implemented for one unit. And it wasn't synched with other departments such as your accounting departments, etc. And also, the current system that was used at that time wasn't integrated as well, or rather properly integrated. And I think when a selection process needs to be done. You know you need to involve all parties and certainly not be the necessary, key role players were not trained. Before the implementation of the system, training needs to take place first, and various departments needed to be involved so that their views can be heard as well so that important methods could be implemented into the system."

MA4

"I think first and foremost, cost of the ERP package. And in against that, what sort of return would we get on it? Secondly, if we can accurately depict the operation by the use of this ERP system that is critical. Just thinking of those two there. Yeah."

The participants here were highlighting **costs**, **key stakeholder involvement (department users)** as factors to consider when **selecting** a new ERP package. Participant **MA1** mentions that systems **integration ability** can also be viewed as a factor to consider when selecting a new ERP package, and the **scalability** of the ERP system.

Question 4: *What characteristics define a successful ERP implementation? What would you say makes an ERP implementation a success?*

This question seeks to find out what characteristics or key performance indicators can indicate that an ERP implementation is a success. The ERP implementation is critical and is regarded as a successful project.

d) Responses from Participants

MA1

"I think I think the answer to this refers back to what I just said, you know, it starts with identifying what the business processes are and how you align the implementation with the business processes, so it doesn't help you just implementing something and say right we want SAP. But why do you want SAP?. What benefits is it going to bring to the company and what are the aspects that we need to consider when implementing this new system so it's all about the understanding and identifying what the business processes are in order to make it a success."

The participants highlight **business process, system and business process alignment** and **usability** as the characteristics that could be used to define a successful implementation. These identified attributes form part of critical success for a successful ERP implementation.

Question 5: *Do you think an ERP implementation will likely affect business value and overall performance?*

The question explores if the implementation will affect how the business runs (productivity and effectiveness) and if it will have an impact on the revenue and competitiveness of SMEs.

e) Responses from Participants

MB1

Yes, definitely. If you don't have a system, and that makes your job easier, then you're not as productive. So, a system, ERP system is supposed to make you more productive, more effective, it's supposed to have time, so you need to be faster at your job. And on top of that, you need to be able to run reports that make decision making simpler. So all of those things are things that add value to the business. So you find yourself also cutting costs, and you extract more from your employees than before because they have a system that is helping them.

The **MB1** participants indicate that the ERP system will impact business value, and overall performance, since the implementation of the ERP system will have a positive effect on the productiveness of the organisation and effectiveness of serving the organisation and helping an SME remain competitive in their area of speciality. The participant also notes that the ERP will also assist the company in cutting costs and also making the company more profitable. The challenges that can emerge there will be more **business process improvement, process system alignment** and **training issues**.

Question 6: *Do you think an SME will experience challenges when implementing ERP? elaborate?*

This question seeks to find out what challenges an SME encounter will when implementing an ERP system, and also the challenges that might be encountered by an SME.

f) Responses from Participants

MB1

"Yes. Yeah. And by the way, I think I've mentioned it before that when implementing an ERP system, not everything is going to work 100% there's just always going to be something that that

needs to be relooked at, and there's always going to be something that got missed, right. So, it's, normal, that there will be challenges that I experienced as you deploy a system. So, for example, I think you're asking in terms of an entirely new ERP system, right. So firstly, users are not familiar with that. Even if you've trained them before, it takes a while for someone to know, especially in sales, when you create a sales order created with va01. But you're doing those multiple times to know that at the back of your head, you don't just know it because you get trained once. So, it's a way it's a work in progress until you perfect it. But the most important thing is just that"

MA3

when implementing a solution, so the challenges that they can face may be it is just not wanting to use the system. So that could be one of the challenges that they can face. And, you know, like resistance to the change and the cost of ERP.

Participant **MB1** indicates that multiple challenges could occur such as **insufficient customizing, incorrect project scoping**, user and **training challenges**. Participant **MA3** identifies cost and resistance to change as one of the major challenges that can be encountered when implementing an ERP system in an SME.

Question 7: *What Pre-implementation challenges does an SME encounter when implementing an ERP solution? And why?*

The question seeks to find the pre-implementation challenges from the participants' perspective and what should SMEs consider a primary objective when in the process of implementing an ERP systems solution.

g) Responses from Participants

MB1

"Firstly, it's, it's not an easy process to find the perfect system that is going to be to be suitable for you and your business. So, at the now, there are people that are engaging with, and they want in the ERP system and of course, seven so amazing. So I always want to go to set, but you have to gather Intel so that you can know which system is going to work for the business and other challenges that you can face. But you can choose a system that is going to require way more than the business is willing to, to invest not just financially but workforce like so now, it maybe it's a system that has cost specialists, right. So those are the only those are some of the issues that can be faced."

Participant MB1 identifies **ERP selection, cost** and **finding a capable implementation partner** as a challenge during the implementation phase.

Question 8: *What Post-implementation challenges does an SME encounter after implementing an ERP solution?*

The question seeks to find the post-implementation challenges from the participants' perspective and what should SMEs consider a primary objective when in the process of implementing an ERP systems solution.

h) Responses from Participants

MB1

"So, after implementing a system, you realize that there are things that are being catered for so sometimes those are things that affect the business right now. There's no workaround strategy, and you have to figure out a plan right now. Right. So those are some of the challenges. Users do not understand how to use the system. And that's a big issue. Because then everything stops. And, you know, you don't have a system if the only people that can use it, other people that implement implemented it. So, you need to be you need your ERP to be user friendly. So, after implementation, those are the problems. Yeah, mostly it's unforeseen circumstances. Yeah."

The participants **MB1** identified **insufficient customizing** or **over-customizing** as one of the possible causes that could occur during the post-implementation phase.

Question 9: *What stage of change management is critical when implementing Enterprise Resource Planning?*

This question explored at what stage pre-implementation, implementation and post-implementation is change management, and what point should the attributes of change management be executed to ensure a seamless ERP implementation.

i) Responses from Participants

MA1

"Now, there wasn't sufficient training. But there was training basically on the job, if I may put it that way because, um, when the system was implemented. It was more of a manual process that occurred before the implementation of the system and that's why the business, decided to implement the system. And then, training, that happened in, on, on the job. And yes, everybody

should gel into, into the system in order to understand what it is all about and why it requires you to do in order to, to complete a process.”

MA4

“I think, as you as we've discussed earlier, highlighting the change management usually happens at the end, and by then sometimes the buying isn't the end is a bit too late and it sort of changes into conflict, but then I think that in a project, change management should be at every step in the whole process, you know, from defining the scope, understanding it to the actual process of when we are implementing it and then even post-implementation. I think change management needs to be there every single step because just like a project, it evolves at every step of the process. And then with regards that, obviously, sometimes the scope will define what will mean the scope will change as the project changes and hence the year the IP system will obviously need to be modified or flexible enough to be able to cater to their own business needs. So I think change management should be at every step within this entire process”

The participants identified **user training**, and the **life cycle of change management** as the most being important across all the steps of ERP implementation. The participants indicated that change management should be carried out from the beginning of the project until the end of the project.

Question 10: *What is the main reason for Small and Medium Enterprises to implement Enterprise Resource Planning?*

This question explores the reasons why SMEs would want to implement an ERP system in their organisation, and what the impact would it have on their organisation.

j) Responses from Participants

MA1

“I think it's more about traceability. It's more about what you call this word, I forgot this word now. You know, openness, basically it's not the word that I'm looking for but transparency, there's the word. Yeah, it's basically about trying to track. You know all the transactions, you need to track them, which is very important. And we are now in a, in a world where departments are integrated right so, transparency is very much important so if the one doesn't know what the other if the one end doesn't know what the other end does. You will not be able to have a successful business, so it's important that the other end knows what the one ended. So, I think it's, I would say it's mostly in those two aspects traceability and transparency.”

Question 11: *What ERP challenges do you think have an overall impact on the overall performance of the business?*

The question explores the ERP challenges that can have an impact on the performance of the business either positive or negative and also highlight what might pose a challenge to the overall business.

k) Responses from Participants

MB1

“So if an ERP system that the company is not working, right, so if well, in it, we'll call it a system is broken, so if there's a component that is broken or a company that is working, and then there's a break in the flow of the business, right, and that affects business operations, now the business has to adapt to make sure that they use whatever they can, at the moment that wherever they can use to cater for that breakdown in the system flow. Right. So that affects the operations of the business. Also, if there's no support to correct or if support is not sufficient, then if there's a problem with the ERP system, their business has nowhere well they have no way of operating until that is fixed. And if support is not sufficient, then that also it's a domino effect. Yes, the domino effect starts here and then affects the entire process”

The participants indicated that **insufficient customizing**, **incapable implementation partner** and **insufficient support from implementation partner** are the possible ERP challenges that can have an adverse effect on the performance of an SME.

Question 12: *What factors are considered before implementing ERP in a Small and Medium Enterprise?*

This question explores what factors SMEs consider before implementing an ERP system and how those factors would affect the decision-making process of the ERP implementation project.

l) Responses from Participants

MB1

“Yeah, I need to know how to maintain the system right. So, every system needs vigorous maintenance. So, you need to know what is needed to maintain it, you need to know the costs of the ERP system, you need to know how user friendly it is. You need to know how demanding it is in terms of support. Right? So not just implementation, but post-implementation. How is it demanding you need to know how long it takes for you to implement that system? You need to

know how so when there's when you say the system is down, how fast are you able to be operating again? Alright, um, yeah, just to name a few at the top of my head."

MA4

yeah in terms of the segregation of duties the size of the business? Because I think even with regards to that, I think like, when you when we speak about SAP, the number of users affects the cost of the whole package as well. And, and obviously, we cannot just give everybody access because the cost of running the packages exceeds the benefit that we're going to get out of it or the return on the investment. And we wouldn't be sort of delivering on the expectations of the ERP system.

Participants indicate that **system maintenance** is a critical success factor, **segregation of duties**, **ERP cost**, **system scalability** as factors to consider before implementing an ERP system.

Question 13: *Do you think Enterprise Resource Planning module selection for SMEs can be classified as a challenge? How so?*

This question explores if an SME would experience any challenges when selecting modules for an ERP or an ERP system, and how would that challenge impact the implementation of the ERP system.

m) Responses from Participants

MA1

"Yeah, it can be classified as a challenge. Depending on how you, how you see it or how you view it. The first challenge that I would say from SMEs would be financial. From a financial point, because it's not just about purchasing a system but it's also about investing in the people to train them so if you need to have financial stability in order to start a system process, and you need to be able to train your people. And then, I'm basically not understanding what the system can do for you, but only understanding what the system can do for you it's two different things. There's a fine line. So, you might understand what the system can do for you, and that is from a theoretical point of view, but not actually knowing what, when you do implement the system what it can do for your business, it's another death scenario. So those are the typical challenges."

Participants indicate that the factors that can affect the selection of an ERP system include **costs**, **training**, **value-add of the ERP system**.

Question 14: *Which stage of Enterprise Resource Planning implementation should receive more attention to achieve higher implementation success?*

This question explores what stage of ERP implementation should receive more attention, pre-implementation, implementation, or post-implementation to achieve implementation success, and why the specific stage should receive attention.

n) Responses from Participants

MA1

"I think it should be at, at the planning stage. That's what so I think it should be when you start to plan the whole, ERP system. You need to basically implement you need to basically put more attention into that because when you plan, it's basically something that you are going with. So, it's important to plan carefully."

MA3

"Okay, I think you know, the developing and an implementation plan. So, planning to have a plan on how the implementation will be executed, and who will be involved at every stage, I think that's very important. So, the overall plan like from the beginning, you know, like, like putting together to put in putting together the plan on how the implementation will be executed. So, the blueprinting, the blueprinting Yeah, we can be part of the planning Yes. But then you know, like looking at the stakeholders as well as part of the planning like who are the stakeholders who need to be involved in like, at every process at every stage of the implementation."

The participants indicated that the initial important step that is critical to the success of the ERP implementation is in the **planning** phase, that is the project scoping process, and highlight the **involvement of stakeholders** as a critical factor.

Question 15: *Why do you think the company chose to implement your current ERP system?*

This question explores the reason why the company chose to implement an ERP solution and what exactly was the company trying to achieve.

o) Responses from Participants

MA1

"That would be the right step to take it would be to consult. But I think, in order to make a decision to implement an ERP system, it starts with, with the, with a project right. So, there is a project that is being implemented in order to implement the system. But consulting is the first phase that should happen. Unfortunately, in our case, when the year when the system was implemented, there wasn't much consultation. We were just informed in notified that a new system will be implemented. But getting views from the relevant state and not stakeholders but in the relevant people involved. We're not done."

MA3

"So, we with Botswana, the business looked at the fact that you know, it was a nice pair of equipment. So, other equipments, branches were already on SAP. So, with Botswana being on a different system, there was no visibility, you know, on what was happening in Botswana. So, that information needed to be found, you know, like for on a different system. So, I think what I know is we I mean, this epi SAP was implemented for them for the head office of Africa, to be able to see what is going on in Botswana on a centralized system, and also see the stock you know, on the paternal sides, everything having everything on one system."

The participant MA3 indicates that the company implemented the ERP because of **transparency**, **visibility**, and the **ability to manage** their day-to-day operations. However, participants **MA1** indicates that when they implemented the ERP solution, **communication** was an issue, **no consultation** and there were also **not all stakeholders were involved**.

Question 16: *How are decisions taken in your organisation to implement the ERP solutions?*

This question explores how the decisions are taken in an SME when in the process of implementing an ERP system if there is consultation, communication, or stakeholder involvement in the entire decision-making process.

p) Responses from Participants

MB1

"So, we have a lot of meetings, a whole lot of meetings, where requirements are discussed. And then from those meetings, a decision is made. So, what I appreciate about my company is that in those meetings, ideas are freely shared. And then each idea is given proper analysis, no matter who it comes from, right. So, from those what can, I call it, brainstorming sessions. That's where then decisions are made of Okay, what can be enhanced, why does a priority."

Question 17: *What positions and key departments are involved in making decisions to implement ERP? and why them?*

This question explores if there in key stakeholders and key departments are involved in the decision-making process, and how the decisions are communicated and implemented.

q) Responses from Participants

MA1

"I would say it's more the executives who start by It starts by the executives, and then it filters down to the head of departments. Why the executives because there needs to support from the necessary stakeholders and they are the stakeholders because they are the ones that will be approving budgets, they are the ones that need to be aware of the type of adopter amount of money that will be invested in order to implement this new system and you need to get buy-in. And then from then, it filters down to the head of departments because they need to be aware of the new change that will be taking place in their department so that, you know, everybody can be aware, and not take it as a shock, and yeah that's why I'm mentioning these stakeholders."

The respondent stated that implementation decisions in the organisation are taken at the executive level, and the information is expected to trickle down from executives to managers/supervisors until it reaches the end-users who are expected to use the system. The identified issue here is the **non-involvement** of critical stakeholders in the implementation process, or during the **selection** of an ERP package.

Question 18: *In which way was the ERP Solution communicated to the organization?*

This question explores how ERP solution decisions are communicated within the organisation and how also looks at the importance of communication in an SME organisation to conscientize employees and prepare them for the upcoming solution.

r) Responses from Participants

MB1

"So the first step would be to have a meeting that organization so that they understand what is going to be implemented? How is it going to affect them how it's going to work, initially, before anything hectic is even done? So that because you know, as if we are aware that the things that we are not privy to that the people in our operations understand. So, in those meetings, those are

the things that will come up, and then that will help us in implementing the enhancements. So, from the beginning, they are put through into that project.”

Question 19: *What did the organization look like before Solution implementation?*

This question explores how an SME conducted business before the introduction of an ERP system and how the ERP system changed how things are done.

s) Responses from Participants

MA1

“No, it was more manual.”

Before the implementation of an ERP solution in the company every business transaction was performed manually, based on the response of the participant, this means that the organisation to effectively implement their currently ERP system they had to start with developing process that could fit in the ERP system and ensure that all the business scoping is done correctly. This shows that there was a process, however, the process had to be refined before the implementation of the ERP system.

Question 20: *Who do you think is responsible for change management in the organisation?*

This question explores if there is an individual assigned to champion change management within the organisation and ensure that all change management processes are followed properly and followed.

t) Responses from Participants

MA1

“I would say it's the project leader.”

MB1

“the implementation team just thought now that implementation teams are not always in-house. So, the in-house implementation team or in-house, whoever belongs in the company within the implementation team, if the implementation team is in house, then that person has to be responsible for change management. But I believe personally that department heads also need to be responsible. Right? Because in most cases, you find that it is the department that is responsible for everything, training people. While the department heads Don't, don't get involved

in that, so every time now there's a new person in the department, it has to intervene. So, I believe that department has needs to be empowered so that they can take charge of that process."

Both responses are very important and showed that **change management** in most cases is non-existent during implementation, and sometimes it is done only at the end of an implementation process, thus making the change management process **inefficient** and resulting being **user resistance** to change,

Question 21: *How is the current ERP perceived by system users? why do they perceive it that way?*

The question explores the behaviour and perception that users have about the ERP system that is being utilized in the organisation and also explore those specific perceptions.

u) Responses from Participants

MA1

"I would say 80/20, 80% meaning good 20% still room for improvement. But overall, it is perceived good by the users. Do you think you'll hear a piece for proposing Why yes, it is fit for purpose because the business needs to be system driven and not manually driven? You know when, when it system drove you, you are preventing a lot of mistakes and you are actually preventing any costs that can in the company incur manual processes, a lot of documents go missing a lot of processes are not filled up until the end because there are various interruptions in between worlds the system can do that for you."

The participant indicated that the ERP package is perceived fairly good when one is using it.. However, there are some functionalities that could be improved or enhanced in order to ensure that the users effectively use the current ERP Package.

Question 22: *Do you think your ERP is fit for purpose? and why?*

This question explores if the users are happy with the current ERP system and also explore the reasons associated with their feeling towards the system.

v) Responses from Participants

MA1

“Yes, because the information that is produced from the system, is what is live in the business unit. So, there is the information on a certain part and you look at the physical versus what the system says, is that there is some alignment between each other.”

Question 23: *Did external partners (Consultants or implementation partners) have any influence in the implementation? How? Why?*

The question explores the role played by external consultants or implementation partners, and their impact on the overall ERP implementation, as well as what they did that assisted the organisation to seamlessly implement the ERP solution, how they did the implementation and why they followed that particular implementation process.

w) Responses from Participants

MB1

“But the consultants and the third parties that we use are people that are going to develop right and do the parts that we can't do in-house. If they were in-house, I would understand what I've done. And then we implemented, okay, so they don't get involved in the implementation, maybe their support. So, they don't influence how things should be done Well, I'm not sure whether this is the influence it. But if we go to a third party, and we say, this is what we want to do, if that party has the right to say, have you thought about doing it this way? And if whenever he's suggesting something that we like, or there could work, that's better, then we go his way.”

The participants indicate that external third-party solutions are used in the implementation cannot be done in-house. Therefore in most cases, the third-party contractor would have an **influence** on how the ERP is implemented.

Question 24: *Do you trust the information in your ERP system?*

This question explores the attitude of the ERP user towards the ERP and the data in the system if the system was properly implemented to service the business seamlessly.

x) Responses from Participants

MB1

“No. I don't know what the English word is which you bring the system. But there are departments that have people that would play around with the system. Or if someone made a mistake, they don't really communicate to say this, there's a mistake that happened. So, for example, if I want to pull a report of all the tracks that have gone out today, I can trust that there's not one track that

they missed, or that they forgot to create a shipment for. So that's always bad in my head, because I've seen crazy high-ticket things in the system. Wait, I wonder if there's something that they missed, then I must go double-check. So, I don't trust."

The participants indicated that they cannot trust for a greater percentage that the ERP data is accurate since some of the people will sometimes input incorrect input data. This effectively indicates that continuous improvement, training and support is required to ensure that users understand the impact of the information they input into the system.

Question 25: *What support were you given during Post-implementation? was it Good? or Bad?*

This question explores the post-implementation support from external partners and the organisation, it seeks to find out if there was post-implementation support for enhancement and upgrades to ensure ERP system sustainability.

y) Responses from Participants

MA1

"In the beginning, it was bad. Because, you know, as I mentioned in my previous statement when the system was implemented, there was a manual process that was in place. So, we, individuals will not really be up to speed with the new system implementation. And nobody understood the system, so it was a matter of playing with the system, playing around with the system, ourselves, and anybody that had additional information within the unit. There was, there was obviously a shared share of information amongst each other. And that's how everything seemed to gel-in and at that time there were a lot of changes happening in the SAP department, so the support was minimal. At that point, but as time went by, the SAP department became stable, and we did not know there was a process in place where we could raise tickets, and there was a turnaround time as well which there is still in order to assess any users that are, that requires further information on the SAP side"

Participant **MA1** indicated that there was not sufficient hand-holding or support from external consultants or vendors and this made working on the system impossible, and they started switching to a manual process. Also, this response showed that training and stakeholder involvement was not done properly during pre and post-implementation.

Question 26: *Where all the stakeholders (users, management, Executives) involved in the Pre and Post implementation of the ERP system?*

This question explores if all company stakeholders were available from the start of the ERP implementation project until post-implementation, and it tries to find out if any of the stakeholders were excluded from the process of system discussions.

z) Sample Responses from Participants

MA1

"No, no, not everybody. It was mainly the executive management. I for myself, Is this is the outbound supervisor, I wasn't involved in in the implementation of the system."

Question 27: *Who do you think is responsible for change management, and when should it be done?*

This question explores who is exactly is responsible for change management within an SME organisation during an ERP implementation project.

aa) Responses from Participants

MA1

"As I said, it should be the project leader, and it should be done from the start of the project."

Participant **MA1** indicated that there is no change agent in the organisation, and therefore the responsibility of change management was that of the project leader.

Question 28: *What issues did your organisation encounter after the implementation of an ERP Solution?*

This question explores issues that the SME organisation encountered when they implemented an ERP solution, and what possible issues can be encountered in that process.

bb) Responses from Participants

MA1

"Well, there's a variety of issues that organization faced what. Firstly, there wasn't a system that did not align with the business processes. There'll be a lot of developments done after the implementation was done because it was realized that certain processes were not in line with how the system was implemented, other departments systems were not integrated. So there were duplication of information that was based on when it was placed on the system versus what the physical is. There were, there was a lack of understanding from the users themselves. And a lot

of training needed to be done for stakeholders to understand the system. So yes, those are the few that I can mention now, amongst other various issues that that was experienced when the system was implemented.”

Participant MA1 indicated that they had issues after implementation where the system was not aligned with the business process. This shows that there was no extensive consultation with the system stakeholders or users, to get much-required requirements before implementation. There was also a lack of training for the vendor side.

Question 29: *Do you think ERP implementation influences how an organisation should run? and why?*

This question explores if the ERP implementation of an ERP system influences the process, functions and bottom-line of the SME organisation.

cc) Responses from Participants

MB1

“Yeah, I think and every system changes everything. Because that's how from the moment it's implemented, that's how the business or every aspect of the business operates or communicates. So, from the point of didn't have a system to when you start having a system, there's a way that there's not going to be a difference, what kind of a difference is another story, but it's definitely going to be impacted. And the way the business is run is going to be influenced by what system we're using, for example, stakeholders, or let's say department heads that don't have a system can make the same decisions as to the people that have the system or is fast.”

Question 30: When should change management be carried out, in Pre or Post Implementation?

This question explored at what point in the ERP implementation, change management should be carried out during the ERP implementation lifecycle.

dd) Responses from Participants

MB1

“Yes, it is important and that's because users at the people that are going to be using this system, so you need to make sure that whatever changes they're going to face that is communicated that is understandable that is also communicated in a manner that the users understand. So, if there's going to be any change in the organization, then you definitely need to change management

because that's one of the most critical aspects of an organization if that is not handled properly, it can be costly to the business."

Question 31: *Do you think change management is important when implementing an ERP solution in an SME? why do you say so?*

This question explored if change management is necessary or important when implementation an ERP solution and the reason that justify the implementation of change management.

MB1

"So, for example, if you're going to implement a system that nobody understands how they are users going to operate the day, you know, and from that, there's not going to be productivity if there's not going to be productivity, then you're not making income. So those are the type of costs that I'm talking about. And also, you, you want, you want to have an organization that runs with all stakeholders in sync. If you, If your stakeholders are your project heads and not really working with you or they don't want. They don't feel valued in that their input matters or in that, how they run the organization matters then they won't have profitable departments. So, you want to make sure that everybody is in thinking everybody is invested."

MA5

"I think it should be carried out across the entire project. the reason behind that, being that the users need to be prepared, you know, for the need to be informed from the beginning about the change. They need to be, you know, prepared mentally. So and then even after, after going live. They still need to be supported you know like revisit, you know, ask them if they are okay. Are they adjusting well to the, to the new system, and you know just give them the necessary support psyche, I think that is all part of change management."

The respondent indicated that **change management** should be carried throughout the implementation life cycle to prepare the organisation for a major change in how they perform work and introduce a new segregated kind of working structure. The participants highlight the fact that doing this will help in preparing users of the system mentally for a major change, by doing so making it easier for them to adjust and accept the change. The participant (MA5) indicates continuous communication with users as a major success factor to consider.

4.3.3 Method for data Analysis

Qualitative data come in different forms including recorded observations, documents, text, audio, multimedia photographs and public sources (Lorelli et al, 2017). For this research textual data will be analysed and transcribed from audio recordings using transcribing software called otter.ai. according to Saunders et al (2012), the researcher needs to be immensely involved with the data to familiarize, understand the depth and breadth of the data. The complexity, volume, and different format of the data in most cases lack consistent structure, however, are all important in conducting a comprehensive data analysis (Lorelli, 2017). Engaging with the data involves the repeated process of going through the data searching for patterns and meanings. It is important to read through all the data before beginning with data coding and identifying categories and themes.

Analysing the interview data, the researcher had to listen to the audio and edit the transcription before running the data through Atlas.ti and part of the process was the researcher had to make sense of the data. The researcher studied the transcript and listened to the recorded audio multiple times to gain more understanding, and understanding the thought of the interviewee, the pertinent factor here being immersing oneself in the details of the interview to understand the deeper meaning before building blocks of codes (Kanter & Medrano, 2017).

In analysing the data and creating order out of various data patterns and commonalities between participants I followed the three (3) steps of coding the data.

4.3.3.1 Open coding

The first step of open coding entailed reading the data. It was then analysed it in detail. This was done to find meaning and to develop an idea of how certain patterns could be grouped and coded. This process involved naming the identified patterns of expression, breaking them down into small parts, analysing them closely, comparing them for similarities and differences and interrogating the phenomena that arise from the data (Alhassan et al ,2019). According to Alhassan et al (2019), the grouped patterns or themes is highlighted in different colours and name each theme subject to its meaning or focus, this process is referred to as '*conceptualizing the data*' where a name represents a certain phenomenon. This was done by comparing utterances by the interviewees in order to identify similar phenomena and ensure that they are given similar names. The names that were given to the theme or category is the name that is logically fit for that data set.

4.3.3.2 Axial coding

The next step undertaken to make more sense of the data was axial coding. Axial coding was used to draw and identify connections within the codes. This process seeks to organize the codes developed in open coding. According to Alhassan et al (2019), this process is referred to as classifying or searching for categories of meaning and it involves looking and searching for categories through the codes that have the meaning of internal convergence and external convergence. Categories or themes, according to Alhassan et al (2019) should be internally consistent, and distinct from one another. In conjunction with this assertion, the grouped themes were highlighted in different participants' narratives that were similar and arranged in a new document.

After conducting axial coding, several categories were supported by a clear set of supporting codes of categories. Diverging views were noted, such as patterns and themes from the narrative of all participants and they provided new meaning and understanding of data text. Alhassan et al (2019) encourages the researcher, to be fully immersed in the data to critically explore every pattern and search for other plausible explanations of the data.

4.3.3.3 Selective coding

The last process implemented was selective coding, where all themes identified from all participants were separated into a selected number that included the final presentation. In formulating themes and connecting all categories around one core category (Alhassan et al, 2019). In doing so the researcher defined the unified theory around the research. The core category was identified to represent the central thesis of this research. In the process of creating themes, families of themes, sub-themes and categories being children and grandchildren were created (Alhassan et al, 2019).

It is important to note that the process of coding using the three (3) methods did not take place sequentially, as the researcher had to go back and forth to make sense of the overall data.

The data was analysed using Atlas.ti to identify code and classify the data into categories and formulate themes. The picture below shows the Atlas.ti project that was utilized.

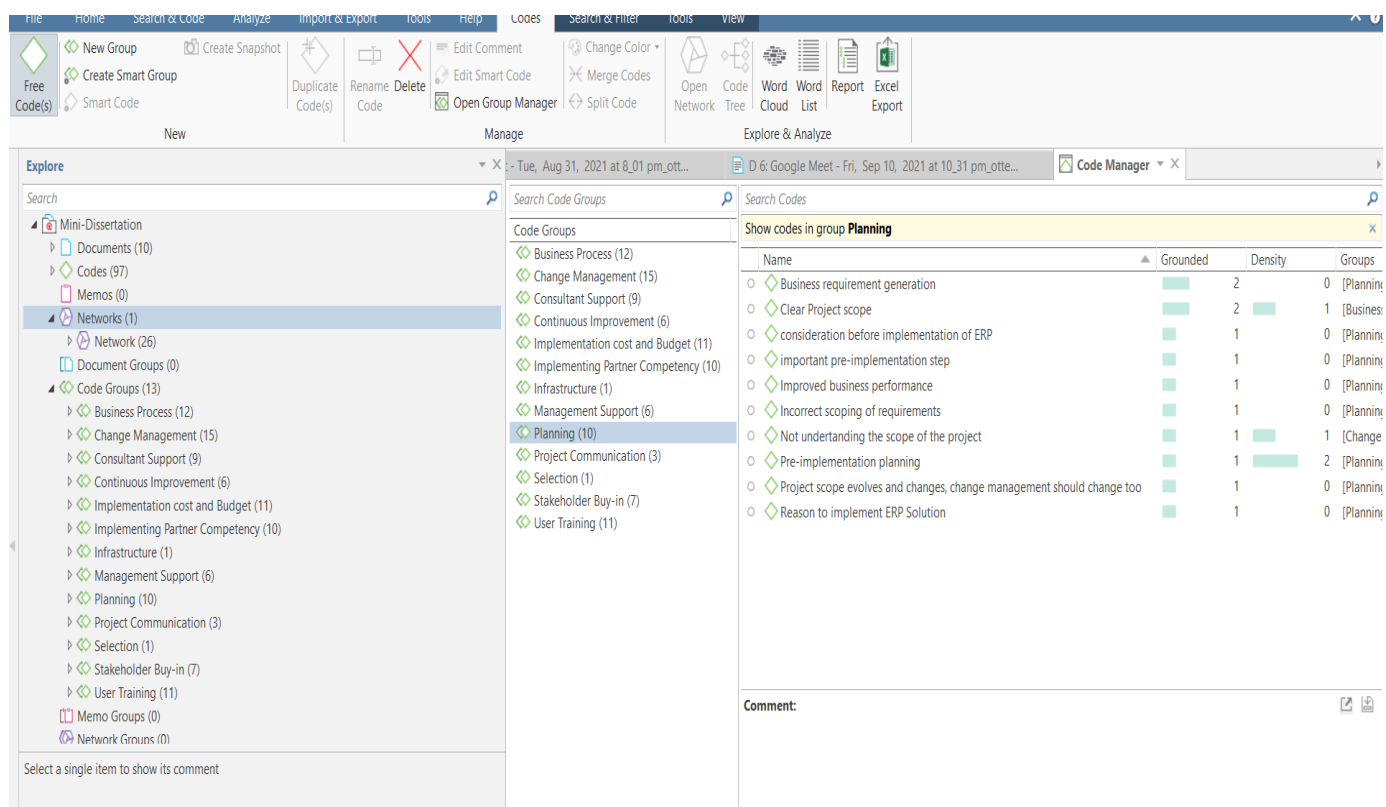


Figure 4.1 - Atlas.ti Data Analysis Process

The figure 4.2 below shows the data network that was extracted from Altas.ti for sub-theme 'Planning' that falls under the theme 'Project scoping'. The diagram shows the codes identified under the sub-theme 'Planning'.

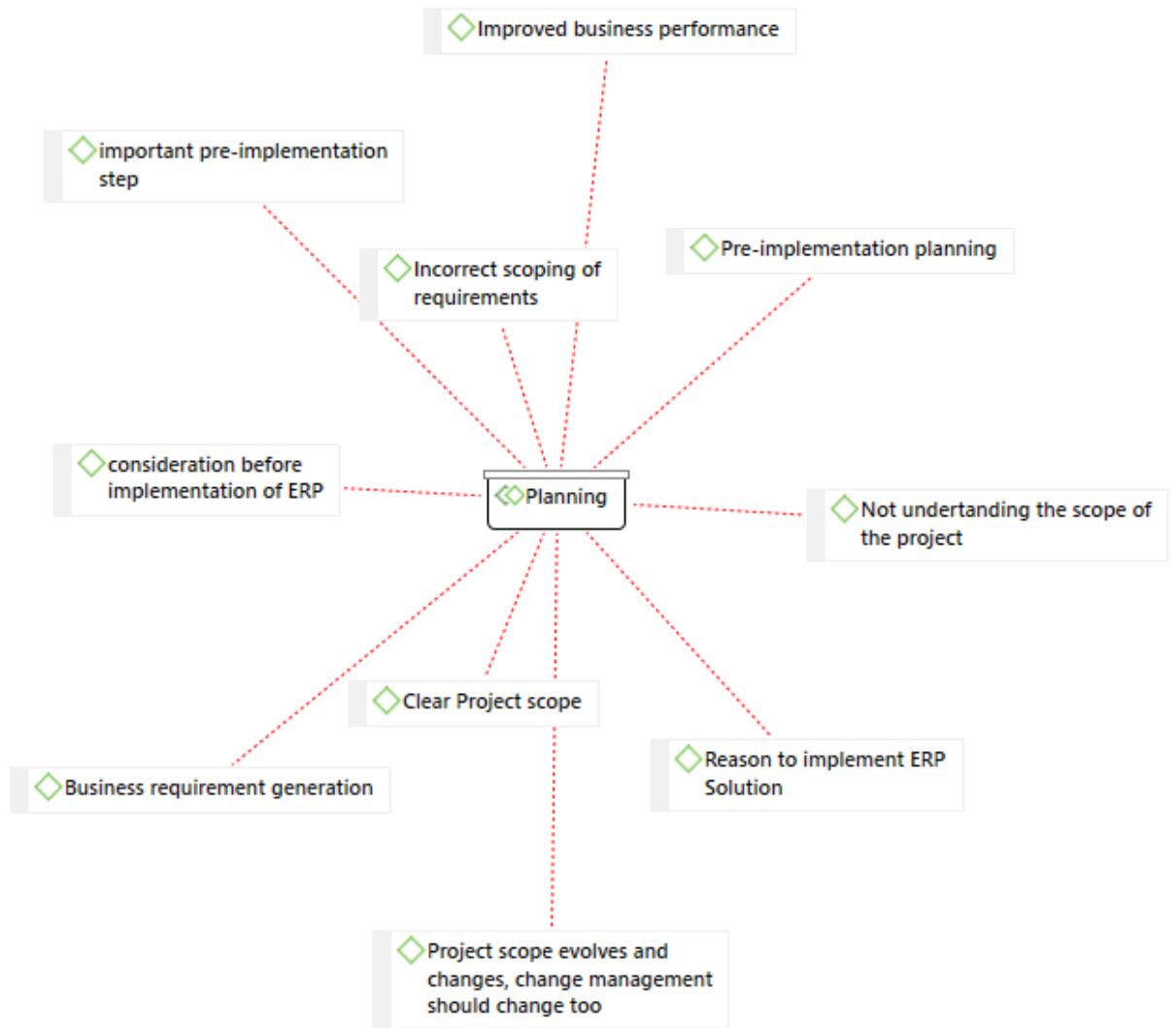


Figure 4.2 - Network for category 'Planning'.

- Change Management
- Management and Executive support
- Project Scoping and Planning
- Costs
- Stakeholder Inclusiveness

The following are the Sub-themes that the researcher identified in the data coding process:

- Business Process
- Implementing Partner Competency
- Infrastructure
- Management Support
- Training
- Stakeholder Buy-in
- Insufficient Planning
- Project Communication
- Lack of user involvement in project scoping
- Vendor Support
- Process alignment

The themes are tabulated below and linked with their corresponding sub-themes. Some of the sub-themes are common across identified themes.

Table 4.1 - Identified themes and sub-themes

Theme(s)	Lack of Continuous Improvement	Employee Resistance	Insufficient Change Management	Lack of Management and Executive support	Insufficient Project Scoping	Costs	Lack of Stakeholder Inclusiveness
Sub-theme(s)	Lack of Consultant Support	Lack of user involvement in project scoping	Insufficient Change Management	Management Support	Process unalignment	Infrastructure Challenges	Stakeholder Buy-in
	Lack of vendor support	Insufficient Project Communication	Insufficient Planning	Insufficient Project Communication	No segregation of duties	Module Selection Challenges	Process alignment
	Infrastructure challenges	Lack of Consultant support	Lack of user involvement in project scoping	Insufficient Management Support	Stakeholder Buy-in	Implementing Partner Competency	No segregation of duties
	Lack of Process alignment	Inefficient Business Process	Lack of Process alignment	Lack of Process alignment	Insufficient Project Communication	No segregation of duties	
	Lack of segregation of duties				Insufficient Planning		

In this chapter, the researcher analysed the data from all participants, coded, categorized and identified major themes and categories that will be further explained in chapter 5.

4.3.4.1 Continuous improvement

Continuous improvement is very critical in the ERP implementation process, this process ensures that upgrades, maintenance, and continuous training take place. In the study, the researcher discovered that if this process is not taken into consideration it results in serious consequences such as user resistance.

"I wasn't much involved in it yes; there was communication about a new system that would be implemented at the time. But I think that it wasn't implemented, or a lot of things were not considered before a selection was done. I think it was purely poorly considered, if I may put it this way because firstly, other departments were not involved, that's point number one in the new implementation because there needs to be an integration amongst departments, and unfortunately when the system was implemented it was only implemented for one unit. And it wasn't synched with other departments such as your accounting departments, etc. And, the current system that was used at that time wasn't integrated as well, or rather properly integrated. And I think when a selection process needs to be done. You know you need to involve all parties and certainly not be the necessary, key role players were not trained. Before the implementation of the system, training needs to take place first, and various departments needed to be involved so that their views can be heard as well so that important methods could be implemented into the system."

The participant indicates that during the vendor implemented a solution however they did not receive prior training, during the post-implementation phase they discovered that some of the functionalities in the system required re-work because the system did not cater for some functionality. This is where continuous improvement is required to fix the issue and implement patches to ensure that the system works according to the specification, provided there was sufficient support given to the organisation by the vendor.

4.3.4.2 Employee resistance

This occurs when the users are involved later in the ERP implementation process, and because of the fear of change, the users tend to reject the system and resort to the old ways of working.

"I think the buy-in of all of the stakeholders and understanding the benefits of an ERP system would be the success of the implementation because once implemented, those key stakeholders

can drive the use and functionality of the ERP system is like for example. When you when we went over to WM, obviously not everybody was quite involved with WM and exposed to Wm. And everybody kept referencing back into LM and saying let's go back into it. But they didn't fully understand the functionalities and the benefits of WM, for instance. So I think with regards to that trying to use this the same brush to paint the picture is if the understanding of the ERP system isn't there and the benefits of the ERP In all these stakeholders, the implementation wouldn't be a success, because people will still revert back to the old ways of doing things, or reports or using and comparing it to an old system and saying that the new system isn't giving you an efficient one."

The participant indicate that stakeholder inclusiveness is critical to making an ERP implementation a success and is key in dealing with and resolving user resistance challenges that may be experienced during the implementation.

4.3.4.3 Change management

Change Management is a critical component in ERP implementation, however, the participants in some instances indicated that change management is non-existent, and some indicated that it is handled in the post-implementation stage.

"I think, as you as we've discussed earlier, highlighting the change management usually happens at the end, and by then sometimes the buying-in isn't there and is a bit too late and it sort of changes into conflict, but then I think that in a project, change management should be at every step in the whole process, you know, from defining the scope, understanding it to the actual process of when we are implementing it and then even post-implementation. I think change management needs to be there every single step because just like a project, it evolves at every step of the process. And then with regards that, obviously, sometimes the scope will define what will mean the scope will change as the project changes and hence the year the IP system will need to be modified or flexible enough to be able to cater to their own business needs. So I think change management should be at every step within this entire process."

The participants indicates that change management is performed mostly at the end of the ERP implementation and raised that change management is critical to the success of the ERP implementation process and it should be performed from the start of the project until the last phase of the project, which is post-implementation.

4.3.4.4 Management and executive Support

The participants indicate that most of the implementation decisions and the implementation planning of the ERP system is done by the top management and in most cases, they do not get enough support during implementation.

"I think, it's more or less like a matrix structure of people that are involved with making or with making a decision. In the ERP system, from senior management to middle management, to the guys on the floor, because at each level, each person uses an ERP system differently and can share the sort of challenges and requirements of an ERP system or ended in blue. And the challenges with implementing an ERP system as well."

The participants here indicated that there is consultation amongst different levels of the business when making ERP decisions he says that all key stakeholders are involved in the process, the other participants also indicate that management support is critical, and the company followed proper consultation when implementing the ERP system.

"So, we have a lot of meetings, a whole lot of meetings, where requirements are discussed. And then from those meetings, a decision is made. So what I appreciate about my company is that in those meetings, ideas are freely shared. And then each idea is given proper analysis, no matter who it comes from, right. So from those what can, I call it, brainstorming sessions. That's where then decisions are made of Okay, what can be enhanced, why does a priority."

4.3.4.5 Project scoping and planning

Project scoping and planning is critical since it is the initiation stage of the project. This involves critical subjects such as cost, ERP product selection and implementation partner identification.

"Depending on how you, how you see it or how you view it. The first challenge that I would say from SMEs would be financial. From a financial point, because it's not just about purchasing a system but it's also about investing in the people to train them so if you need to have financial stability in order to start a system process, and you need to be able to train your people. And then, I'm basically not understanding what the system can do for you, but only understanding what the system can do for you it's two different things. There's a fine line. So you might understand what the system can do for you, and that is from a theoretical point of view, but not actually knowing what, when you do implement the system what it can do for your business, it's another death scenario. So those are the typical challenges."

Financial consideration and budgeting for an SME are discussed in detail to decide whether the SME can afford On-premises or cloud ERP solutions, and what kind of licencing can the SME go for and if they can afford it.

4.3.4.6 Stakeholder inclusiveness

The participants indicated that in the implementation of the ERP low-level users were not included in the implementation of the scoping sessions and that resulted in many issues in the system and further enhancements were required after the completion of ERP implementation to ensure that the business process is aligned.

“So, I said it's going to be a bit of a bias answer here, but I think not because post-implementation. And fast forward to when I joined a lot of the problems that I found when speaking to the key players in our team, said that they weren't part of the overall pre-planning and pre-implementation of the ERP system. And it was already signed and agreed on with management and further up, and it was something that was just sort of laid out for them to utilize and run with. So, as I said, they were all stakeholders involved in paper scanning, my answer would be no. But I'm just giving you a bit of background.”

The other participant indicates that when the system was implemented, they were not consulted prior, they only consulted at a later stage in the process.

“That would be the right step to take it would be to consult. But I think, in order to make a decision to implement an ERP system, it starts with, with the, with a project right. So, there is a project that is being implemented in order to implement the system. But consulting is the first phase that should happen. Unfortunately, in our case, when the year when the system was implemented there wasn't much consultation. We were just informed in notified that a new system will be implemented. But, and getting views from the relevant state and not stakeholders but in the relevant people involved. We're not done.”

The participants say this resulted in business process misalignment, and further customization was required to fix the bugs.

4.4 Chapter summary

The chapter presented the findings of the data collected and elaborated on the data collection process and the data analysis process that was followed to make sense of the data. The chapter also presented the results and the interpretation of the results to answer the research questions

and to achieve the main aim of the study, which is to investigate the pre and post challenges that are encountered when implementing ERP in SMEs.

5 Chapter Five: Discussion of the findings

5.1 Chapter overview

This chapter merges the theoretical framework with the study findings. This assists in understanding the main aim of this research and also in answering the research question using the themes and sub-themes identified in chapter 4. The main aim of this study was to identify the challenges that SMEs encounter when implementing an ERP system. This information will assist SMEs to have more information and the knowledge to prepare efficiently and effectively for their ERP implementation.

The themes identified in the data analysis process was discussed and incorporated in this research and helps in answering the primary questions. The pre-implementation and post-implementation challenges that are encountered when implementing an ERP in SMEs, are discussed in this chapter.

5.2 Discussions of the findings

5.2.1 Pre-implementation challenges

Hustad and Olsen (2014) identify resource constraints such as a limited financial resource, as one of the challenges that an SME may have to drabble with when planning to implement an ERP system, and he also indicates that SME given their limited financial resource cannot afford to fail as this can have devastating effects for the organisation. This is also what the study discovered in the interview data analysis. One interviewee indicated that the key consideration that an SME should look at before implementing an ERP system is **costs** and the **capacity of a competent implementation partner**. An SME needs to choose the best implementation partner who is well capacitated to implement the ERP solution and to give valuable advice to the organisation during the planning and scoping stage.

"I think first and foremost, cost of the ERP package. And in against that, what sort of return would we get on it? Secondly, if we can accurately depict the operation using this ERP system that is obviously really, critical. Just thinking of those two there. Yeah."

In the study conducted by Salum et al (2015) in the Middle East companies, he indicates that the pre-implementation phase of an ERP system in SMEs was mainly influenced by the CEO and top management was not always ready to implement business process re-engineering. This agrees with what was discovered where other critical stakeholders are excluded in the pre-implementation stage, and during this phase, there is a **lack of communication** between the

implementation team and the company stakeholders. The study has identified **stakeholder inclusiveness** as one of the challenges in pre-implementation. Key stakeholders such as users are very important in business process re-engineering because this process directly affects how they do their work and their input is very significant in determining which ERP system the company should consider.

"No, no, not everybody. It was mainly the executives' management. I for myself, Is this is the outbound supervisor, I wasn't involved in in the implementation of the system."

Saxena and McDanagh (2020) proposed a 6-stage model for companies to use when considering implementing an ERP system for the first time, the process proposed includes planning, information search, selection, evaluation, negotiations, and this process inter-relates with each other. What was discovered is that the executive will decide to implement without going through a rigorous process of searching for a suitable ERP solution and in most cases, the end-users have to radically adjust to this change resulting in user resistance to change.

In the exploration, it was discovered that key stakeholders such as users are excluded during the critical pre-implementation phase and only executive and top management are involved in this process and this results in issues during the post-implementation phase. According to Salum et al (2015), the main reason for unsatisfactory ERP implementation was mainly because of company culture and management approach, autocratic management style, and the recruitment of an inadequate number of IT personnel. This shows a complete disconnect between management and actual system users.

During the ERP selection process, SMEs need to select an ERP product that has a good record and is easy to find resources that can support it. It is also critical to also take on board a competent implementation partner who can share knowledge, give advice to management and able to train the system users. Hustad and Olsen (2014), notes that SMEs lack critical skills, sometimes they face challenges in configuring an ERP system and lack of internal capacity and expertise about how to implement and organise organisation-wide projects such as an ERP project, hence they need to rely on external consultants and support from ERP software vendors to implement the ERP project.

"I wasn't much involved in it yes; there was communication about a new system that would be implemented at the time. But I think that it wasn't implemented, or a lot of things were not considered before a selection was done. I think it was purely poorly considered, if I may put it this way because firstly, other departments were not involved, that's point number one in the new implementation because there needs to be an integration amongst departments, and

unfortunately when the system was implemented it was only implemented for one unit. And it wasn't synched with other departments such as your accounting departments, etc. And also, the current system that was used at that time wasn't integrated as well, or rather properly integrated. And I think when a selection process needs to be done. You know you need to involve all parties and certainly not be the necessary, key role players were not trained. Before the implementation of the system, training needs to take place first, and various departments needed to be involved so that their views can be heard as well so that important methods could be implemented into the system."

Project planning and Scoping is the themes we discovered in our analysis, and it is one of the facets of pre-implementation. The researcher discovered during the study that an ERP system was implemented and did not work as envisioned by the top executive and management, and users did not receive any training from the implementation partner. Having a well-capacitated implementation partner who has a good record in implementing ERP systems it becomes easier and simpler to advise the executive and management about what needs to be done in order to achieve great implementation success.

Change management as discovered by the findings is very critical to the success of an ERP system implementation in an SME setting, it was discovered that change management should be implemented across the project lifecycle, and it must form part of all the steps in the implementation success. Bugubayeva et al (2017), advise organisations to identify important factors of consolidating and sustaining changes, which requires continuous monitoring, follow-up meetings and reviews so that the staff feel the support of management and can cope with changes in the workload and resource allocation.

Since SMEs have resource constraints, they primarily depend on external implementation partners to assist with resources and to advise them on the implementation process, this makes the SME highly dependent on external assistance. Singh et al (2016) recommends that before implementation an organisation should develop a project structure that includes roles such as executive sponsor, project leader, process owners, super users, vision, planning team and implementation team. This is not the case, the study discovered that the total exclusion of other important stakeholders and other roles are not defined as indicated by Singh et al.

5.2.2 Post-implementation challenges

Lee and Chang (2020) state that ERP post-implementation becomes a challenge when perceived benefits are not realised due to a lack of understanding by managers of what the ERP systems are about. The participants indicated that training was only conducted at the end of the

implementation process. This creates unwanted system issues since users start resisting to use the implemented system by using old methodologies and capturing incorrect information because sufficient training was not provided. This makes change management a critical component in the ERP implementation lifecycle because it seeks to involve all the parties affected by the system. Campagnolo (2013) says that compromises during the design phase and rushed project timelines of ERP project have a negative impact on the performance of the ERP system and also affects the benefits that were not communicated clearly. This is a case in the study where the ERP project is planned by management and the implementing partner, and only communicated at a later stage during post-implementation that the system is ready for use, this had an adverse effect on the performance of the system since users of the system did not receive sufficient training.

“Now, there wasn't sufficient training. But there was training basically on the job, if I may put it that way because, um, when the system was implemented. It was more of a manual process that occurred before the implementation of the system and that's why the business, decided to implement the system. And then, training, that happened in, on, on the job. And yes, everybody should gel into, into the system in order to understand what it is all about and why it requires you to do in order to, to complete a process.”

Domagala et al (2021) state that the ERP market saturation shows that there is less implementation, making the post-implementation phase very critical. The study identified the following themes that can be identified as challenges if the post-implementation process is not given enough attention it requires.

Haddara and Moen (2017) in the literature framework states that handling adoption of ERP system and managing change, mostly hurdle identified is user resistance to change as one of the challenging factors that threaten their livelihood. This statement agrees with what the study found as a challenge, user resistance to change, and that is as a result of insufficient change management. Haddara and Moen (2017) suggests that to deal with resistance that is normally brought up by fear, company leaders should talk to employees because talking to employees can be used to educate potential users of the ERP about the benefits. Communication was identified as one of the possible challenges that could cause a challenge to the seamless implementation of an ERP system in an SME setting. It is also important for the SME executive to maintain constant communication during ERP post-implementation for them to know when they should introduce enhancements, upgrades, maintenance, and continuous training as part of continuous improvement efforts.

5.2.3 Factors that affect the implementation of ERP in SMEs

The themes and sub-themes identified in chapter four are referred to as critical success factors in the literature framework. The study conducted by mufeti and Smolander (2017) identified critical success factors of ERP implementation in am SME as follows

- Top management support
- Training
- Communication
- Monitoring and evaluation
- Business Process Requirements
- User Involvement
- Project Management
- Change Management
- Selection of a good ERP Package
- Clear vision and efficient business plan

The study found factors (Categories) that can have an adverse effect on the ERP implementation in an SME company as follows, although the study has some factors as Sub-Categories they can be used interchangeably.

- Continuous Improvement
- Employee Resistance
- Change Management
- Management and Executive support
- Project Scoping and Planning
- Costs
- Stakeholder Inclusiveness

The following Sub-Categories that were identified in the data coding process are as follows:

- Business Process
- Implementing Partner Competency
- Infrastructure
- Management Support
- Training
- Stakeholder Buy-in
- Insufficient Planning
- Project Communication

- Lack of user involvement in project scoping
- Vendor Support
- Process alignment

These identified critical success factors can have an adverse impact on the implementation of ERP systems if they are not handled with care, and less consideration is given to them.

The identified factors are critical to the implementation of ERP in SMEs as they can affect the performance and business value resulting in loss of business if they are not taken into consideration. Panorama (2020) says that the major cause of ERP failure is because of organisations not having a business case and benefit realization plan, and further suggests that organisations should define metrics of how they expect the new ERP to improve business performance and ensure that their investment is not wasted.

Doppelt and McDonough (2017), says implementation of a new information system will influence the business process, individuals, and the dynamics in the organisation, and If the change is not well managed within an organisation, a resistance to change will mostly occur and the change might likely fail.

Change Management is a critical component that SME organisations should invest in and consider incorporating a change agent when implementing an ERP system. Change management ensures that the fears of system end users are alleviated before the system is rolled out, however as indicated in the presentation of the findings in this study the timing is very critical and this research states that change management should be part of every phase of the ERP project lifecycle.

5.3 Chapter summary

This chapter discussed the findings of the data collected. This includes merging the findings of the study with the existing literature framework. The chapter looked at the pre-implementation and post-implementation challenges by merging the findings and the literature frameworks. The challenges of implementing an ERP system in an SME were identified and discussed.

6 Chapter Six: Conclusion and recommendations

6.1 Chapter overview

This chapter concludes the study by providing an overview and summarizing the findings of this study in respect of the research questions. The chapter also presents limitations of the study, the contribution this study has been able to contribute to the body of knowledge, including recommendations and recommendations for future research.

6.2 Research objectives revisited

Different questions were asked in chapter one this included the Primary question and the secondary questions. To understand and break down the aim of this study, which was to 'investigate the pre and post challenges that are encountered when implementing ERP in SMEs', these research questions are revisited.

What are the factors that affect the implementation of ERP in SMEs?

The researcher addressed the factors throughout this study. However, more emphasis was put on it in chapters 4 and 5. This was done was identifying the factors that can affect the implementation of an ERP system in SMEs in chapter 4. The factors were then discussed by using the interpretative philosophy. The factors identified are as follows

- Continuous Improvement
- Employee Resistance
- Change Management
- Management and Executive support
- Project Scoping and Planning
- Costs
- Stakeholder Inclusiveness

The study found that a lack of continuous improvement in the implementation of an ERP system in an SME can negatively affect the implementation process and the handover to system users, especially when the process project scoping and planning process was not correctly conducted by including all stakeholders in the requirements elicitation process. This effectively leads to employees/users who are expected to use the ERP system resisting to adopt the use of the system. Change management was also identified as a continuous process that should be undertaken throughout the implementation lifecycle, and this also required management and executive support to ensure that the change is well managed within the organisational setting.

What are the challenges that ERP implementation has on SMEs business value and performance?

In the literature, the challenges were identified and further explored in chapter 4 and 5. The challenges identified by Gogulladass (2020) in the literature review include the need for high-end hardware, cost and high maintenance cost, employee resistance, insufficient requirement elicitation in the pre-implementation phase, lack of support from senior management and lack of ERP awareness. Similarly, in the findings of this study the researcher identified continuous improvement, lack of support from senior managers, change management, project scoping and planning and stakeholders' inclusiveness as challenges that can affect SME performance and value.

The study found that the below factors can affect both performance and value in an SME during ERP implementation:

- Continuous Improvement
- Employee Resistance
- Change Management
- Management and Executive support
- Project Scoping and Planning
- Costs
- Stakeholder Inclusiveness

What are the effects of ERP implementation on SMEs change management?

The study explored the concept of change management in the literature and the concept was identified as one important factor that can affect the implementation of an ERP system in an SME. Change management is discussed in chapter 4 and chapter 5 of this study. In the literature, Bugubayeva et al (2017) mentions that there are a number of steps that the management of any organisation should consider implementing a major system change:

1. Developing a plan
2. Providing a vision for the future
3. Leadership to articulate the vision and deliver on the implementation of the plan
4. Communication of the vision and details of the plan to all stakeholders

5. Gain support for the plan
6. Put the appropriate arrangements in place to facilitate implementation
7. Implement the changes while at the same time continuing to provide a service
8. Embed the change in the organization

Doppelt and McDonough (2017) identified two types of changes that should be considered at the industrial level, incremental change where they argue that change is not a uniform process, the state that change is a continuous process that should be adjusted from time to time. The other type is discontinuous change, this is specifically for significant change in organisations. The study identified that change should be a continuous process and adjusted in every phase of the implementation process. SMEs should implement change management in all the phases of ERP implementation to ensure that all stakeholders are involved, trained, in order to ensure efficient project scoping and end to end change management.

What are the pre-and post-challenges that are encountered when implementing ERP in SMEs?

The post and pre-implementation challenges that are encountered when implementing ERP in SMEs were discussed in the literature as well as in chapters 4 and chapter 5 and these challenges were discussed thoroughly. According to Salum et al (2015), the reason for the unsatisfactory ERP implementation was because of company culture and the management approach, the autocratic management style led to unsatisfactory ERP implementation, and not recruiting an adequate number of IT personnel, no providing adequate training to staff, not delegating some authority to lower-level management contributed to unsatisfactory results in the post-implementation phase. These are the themes identified in the study findings such as Lack of executive and management support, employee resistance, lack of change management, costs and lack of stakeholder inclusiveness.

According to Krailjic (2014), ERP literature implementation models often exclude the post-implementation activity phase (Krailjic, 2014). For this study, the researcher has mapped an implementation model that includes all the steps in the implementation process that SMEs needs to consider when implementing an ERP system.

The figure 6.1 below shows the proposed model for ERP implementation in SMEs.

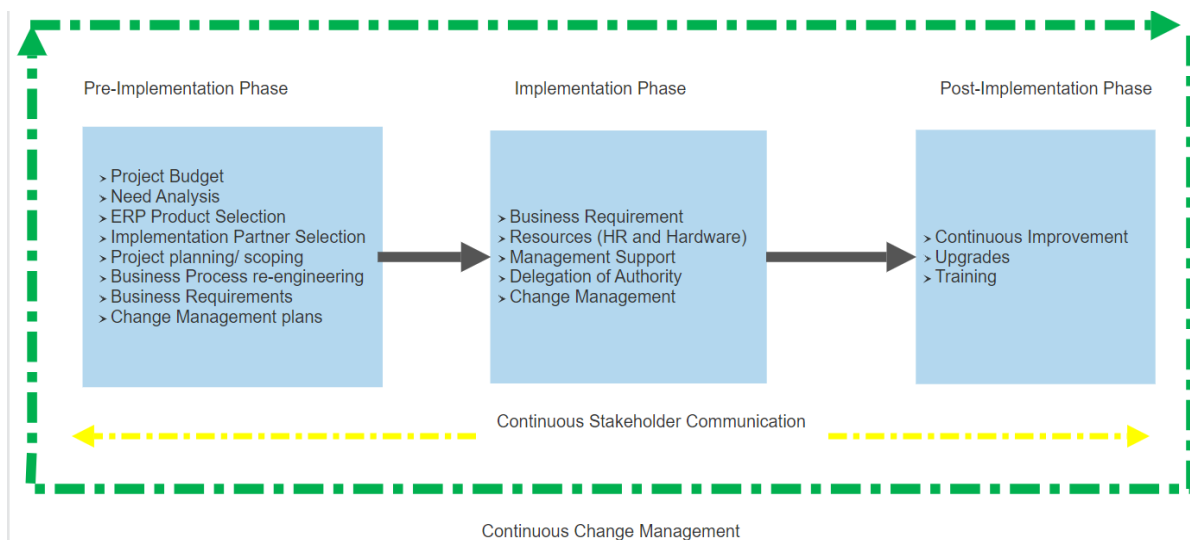


Figure 6.1 - Proposed Model for ERP implementation in SMEs

The model shows the process that should be considered at the Pre-implementation phase, implementation phase, and Post-implementation phase. The model shows change management (green arrows) as a continuous process that is considered across the implementation lifecycle. The model also shows continuous stakeholder communication (yellow arrows) as an on-going process to keep all stakeholders informed about the process of the ERP implementation.

6.3 Recommendations

The study recommendation to the SMEs implementing ERP system or in the process of implementing an ERP system, these recommendations are also very important to implementing partners and consultants:

1. SME organisation should consider costs of infrastructure, ERP system implementation, training and post-implementation upgrades. And also consider cloud infrastructure and pay-per-use licences.
2. Organisations should also consider process optimization and business process re-engineering to ensure that the system that the organisation selects is as per the business requirement and processes.
3. SME organisation should align their business process to industry best practices to ensure seamless ERP implementation since most SME ERP systems are based on industry best practices.
4. Organisations should conduct a thorough need analysis based on their organisational strategic goal to ensure that the ERP system to be implemented also fits in the future strategy of the business.

5. SME requirement should consider cloud ERP solution because it is not infrastructure intensive as opposed to on-premises that could be very costly for SMEs. Most ERP providers offer different types of licencing such as pay-per-use or pay-per-user and an SME can decide on storage capacity required backups and replication.
6. Executive, management, and key users should be involved, show commitment and ensure that there is continuous communication between them and implementation partners across all stages of the ERP implementation process that is pre-implementation, implementation, and post-implementation.
7. SME organisation should implement change management across all the implementation stages, in order to prepare system users for a system change and a change of process, this includes training employees on using ICT equipment, and navigating basic computer functionality, this will ensure that during post-implementation the organisation will not experience user resistance.

6.4 Recommendations for future research

The qualitative study results highlighted several new avenues to be investigated and also some unanswered questions. Future research should be conducted on the pre-implementation phase since it's the most critical stage in the ERP implementation process specifically in an SME setting because the SME market is currently the target market for ERP system manufacturers. The research should be conducted in the Planning/Scoping, Business process re-engineering as well as cost and budgeting procedures for implementation. The other area of interest is investigating an efficient way of implementing an efficient cloud ERP system at reasonable costs that SMEs can afford, or the new cloud pricing model for SAAS, except licencing costs and pay-per-use methods.

6.5 Research limitations

This study was conducted using a qualitative study approach, and despite the fact that a thorough process of data collection and analysis was implemented, the study still has some limitations. The study used data collected from two organisations. Therefore, the findings cannot be interpreted beyond the organisational context. While the interpretative philosophy was employed to obtain in-depth knowledge about the aim of this study, future studies can expand the breadth of this study to get a more in-depth analysis by using quantitative methodology. Also, there were various types of ERPs not considered in this study, only well-known ERPs such as SAP, Oracle, SAGE Pastel, Kerridge, Microsoft were considered.

6.6 Concluding remarks

Following a traditional method of grounded theory, the study explored and identified the challenges of implementing an ERP system in an SME company, and the primary research questions were satisfied for both the pre-implementation and the post-implementation challenges of an ERP system in an SME setting. The study also explored the factors that could affect the implementation of an ERP and the challenges that would affect value and performance. Two private sector SMEs were identified and engaged to perform the research study for an in-detail investigation of the research question. The meetings were scheduled with the selected organisation and the employee selected for this research study. Six interviews were conducted and recorded using Zoom and Google meet. All the qualitative data was analysed using 'Atlas.ti'. The study identified challenges such as change management, management and executive support, project scoping/planning, Employee resistance, stakeholder inclusiveness, costs, and continuous improvement as major factors that can have an adverse effect on the implementation of an ERP system in an SME. The challenges identified in pre-implementation include project scoping, costs, stakeholder inclusiveness, change management, product selection, and implementation partner capacity. Post-implementation challenges include management and executive support, employee resistance, change management, continuous improvement, and communication.

This study contributed to both research and practice of implementing an ERP system in SMEs, by highlighting challenges that can be encountered by SMEs. In practice, the paper shares light on the past and the present ERP challenges, and stories that can guide vendors, SMEs, and consultants in their future projects. The study also shares the findings that can empower SMEs, vendors and consultants during the implementation of ERPs in an SME setting. In research, this study can aid researchers in understanding challenges that SMEs encounter daily, and also help them in identifying research topics by identifying the gaps of the study.

References

- Abuhashish, F. & Tahat, K. 2020. Readiness research for implementing ERP systems: a case study. *International Journal of Business Information Systems*, 35:167. 10.1504/IJBIS.2020.110168
- AFON. 2021. What is and isn't ERP? <https://www.afon.com.sg/the-ultimate-sme-guide-to-erp-systems>. Date of access: 12 July 2021.
- Ahmad, M. and Cuenca, R.P. 2013. Critical success factors for ERP implementation in SMEs. Robot. Computation. -Integration. Manuf.
- Al-Fawaz, K., Eldabi, T. & Naseer, A. 2021. Challenges and influential factors in ERP adoption and implementation.
- Albadri, F. & Kovacevic, V. 2013. ERP Implementation. In. pp. 110-127.
- Alhayek, W. 2017. ERP Implementation Common Failure Reasons and How to avoid Them. *The Arab Journal of Sciences and Research Publishing (AJSRP)*, 1,
- Association, I. & Campagnolo, G. 2013. The Role of Management Consultants in Long-Term ERP Customization Trajectories. In. pp. 1053-1071.
- Almuhayfith, S. Shaiti, H. (2020) The impact of Enterprise Resource Planning on Business performance: With the discussion on Its Relationship with Open Innovation. *Journal of Open Innovation*. ;2: 1-24.
- Belitski, M. & Liversage, B. 2019. E-Leadership in Small and Medium-Sized Enterprises in the Developing World. *Technology Innovation Management Review*, 9:64-74. 10.22215/timreview/1212
- Beric, D., sekulić, D., Lolić, T. & Stefanović, D. 2018. *Evolution of ERP Systems in SMEs – Past Research, Present Findings and Future Directions*.
- Boubekri, N. 2001. Technology Enablers for Supply Chain Management. *Integrated Manufacturing Systems*, 12:394-399.
- Brown, C, and Vessey, I. 2003. Managing the Next Wave of Enterprise Systems: Leveraging Lessons from ERP. MIS Quarterly Executive,

Brugger, T. 2020. ERP Software Implementation - Definition and key components of implementation success .

Bugubayeva, R., Sansyrbayevna, R. & Teczke, M. 2017. Approaches and models for change management. *Jagiellonian Journal of Management*, 3:195-208. 10.4467/2450114XJJM.17.014.9785

Coyte, R.R., & Guthrie, J. 2012. The management of knowledge resources in SMEs: an Australian case study. *Journal of Knowledge Management*, 16:789-807.

Chen, C., Law, C. & Yang, S. 2009. Managing ERP Implementation Failure: A Project Management Perspective. *Engineering Management, IEEE Transactions on*, 56:157-170.

De Wet, P. 2019. The definitions of micro, small, and medium businesses have just been radically overhauled – here's how. <https://www.businessinsider.co.za/micro-small-and-medium-business-definition-update-by-sector-2019-3> Date of access: 01 September 2020.

Domagała, A., Grobler-Dębska, K., Wąs, J. & Kucharska, E. 2021. Post-Implementation ERP Software Development: Upgrade or Reimplementation. *Applied Sciences*, 11(11):4937.

Doppelt, B. & McDonough, W. 2017. *Leading change toward sustainability: A change-management guide for business, government and civil society*. Routledge.

Fahd, A. 2014. *A model for the implementation of ERP systems in midsize businesses*. <https://vuir.vu.edu.au/28815/1/Fahd%20Alizai.pdf>

Flores Kanter, P.E. & Medrano, L. 2019. Basic Core in the Analysis of Qualitative Data: Steps, Techniques to Identify Themes, and Data Display Forms. *Interdisciplinaria*, 36,

Fruhlinger, J.W., & Sayer, P. 2020. 16 famous ERP disasters, dustups and disappointments. <https://www.cio.com/article/2429865/enterprise-resource-planning-10-famous-erp-disasters-dustups-and-disappointments.html> Date of access: 22 July 2021.

Goldston, J. 2020. The Evolution of ERP Systems: A Literature Review. *International Journal of Research*, 50:1-18.

Iriberry, A., Kwon, O. & Henson, J. 2015. Integrating an ERP into the Curriculum at a Business School: Student's Perceptions of SAP -- *Academy of Educational Leadership Journal*. 19,

Haddara, M. & Elragal, A. 2015. The Readiness of ERP Systems for the Factory of the Future. *Procedia Computer Science*, 74:721-728.

- Haddara, M., Hustad, E. & Kalvenes, B. 2016. ERP and Organizational Misfits: An ERP Customization Journey. *Procedia Computer Science*, 100:429–439. 10.1016/j.procs.2016.09.179
- Haddara, M. & Moen, H. 2017. User resistance in ERP implementations: A literature review. *Procedia Computer Science*, 121:859-865. 10.1016/j.procs.2017.11.111
- Hatamizadeh, A. & Aliyev, A. 2012. *Survey of ERP systems implementation*.
- Harun, S. & Hewitt, B. 2013. *Challenges to Implementing ERP Systems*.
- Hustad, E. & Olsen, D. 2014. ERP Implementation in an SME: A Failure Case. In. pp. 213-228.
- Hoch, J.E.D., J.H. 2012. Shared leadership in enterprise resource planning and human resource management system implementation. *Human Resource Management review*.
- Hennink, M., Hutter, I., & Bailey, A. 2011. *Qualitative Research Methods*. SAGE.
- Hustad, E. & Olsen, D. 2014. ERP Implementation in an SME: A Failure Case. p. 213-228).
- Ibrahim, A. 2015. *WHAT ORGANISATIONS SHOULD KNOW ABOUT ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM*.
- Iriberri, A., Kwon, O. & Henson, J. 2015. Integrating an ERP into the Curriculum at a Business School: Student's Perceptions of SAP -- *Academy of Educational Leadership Journal*. 19,
- IWH. 2015. Cross-sectional vs. longitudinal studies. <https://www.iwh.on.ca/what-researchers-mean-by/cross-sectional-vs-longitudinal-studies> Date of access: 27 July.
- Kabir, S.M. 2016. SAMPLE AND SAMPLING DESIGNS. In. pp. 168-180.
- Kimutai, G., K. 2014. ASSESSMENT OF THE EFFECT OF ENTERPRISE RESOURCE PLANNING ON PERFORMANCE OF ORGANISATIONS WITHIN THE AGRO-PROCESSING INDUSTRY IN KENYA:A CASE STUDY OF KTDA FACTORIES IN BOMET COUNTY.
- Korstjens, I.M., A. 2018. Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *EUROPEAN JOURNAL OF GENERAL PRACTICE*, 24:120-124.
- Kraljic, A., Kraljic, T., Poels, G. & Devos, J. 2014. ERP implementation methodologies and frameworks: A literature review. In *Proceedings of the 8th European Conference on IS Management and Evaluation (ECIME)*, Ghent, Belgium, 11–12 September 2014; Academic Conferences and Publishing International Limited: Reading, UK, 2014, pp. 309–316.

Kurbel, K. 2013. ERP System Implementation. In. pp. 159-188.

Laerd. 2019. Principles of research ethics. <http://dissertation.laerd.com/principles-of-research-ethics.php> Date of access: 01 September 2020.

Lee, N. Chang, J. 2020. Adapting ERP Systems in the Post-implementation Stage: Dynamic IT Capabilities for ERP. *Pacific Asia Journal of the Association for Information Systems*:28-59. 10.17705/1pais.12102

Lehner, F. 2018. ICT skills and competencies for SMEs: Results from a structured literature analysis on the individual level. In. *The Impact of Digitalization in the Workplace*: Springer. pp. 55-69.

Maditinos, D., Chatzoudes, D., & Tsairidis, C. 2012. Factors affecting ERP system implementation effectiveness, *Journal of Enterprise Information Management*, 25(1),

Magaisa, G. 2015. *DEFINING SMEs*.

Mareai, B. 2013. Enterprise Resources Planning in Small and Medium-sized Enterprises: An overview. 2.

Mathara, S., Chong, S.-C. & Gunawardana, K. 2015. *International Journal of Management Technology Vol.3, No.1, pp.1-19, September 2015*.

Mohajan, H. 2018. Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People*, 7:23-48. 10.26458/jedep.v7i1.571

Mufeti, V. & Smolander, K. 2017. What are the requirements of a successful ERP implementation in SMEs? Special focus on Southern Africa. *IJISPM - International Journal of Information Systems and Project Management*, 5:5-20.

Nguyen, T.H.N., M; Macaulay, M.J. 2013. Information Technology Adoption in Small Business: Confirmation of a Proposed Framework. *Journal of Small Business Management*.

Nicolaou, A. & Bajor, L. 2011. ERP Systems Implementation And Firm Performance. *Review of Business Information Systems (RBIS)*, 8:53. 10.19030/rbis.v8i1.4504

Nowell, L.S., Norris, J.M., White, D.E. & Moules, N.J. 2017. Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, 16(1):1609406917733847. 10.1177/1609406917733847

OECD. 2016. Employees by business size (indicator). <https://data.oecd.org/entrepreneur/enterprises-by-business-size.htm> Date of access: 05 October 2020.

OECD. 2020. SMALL AND MEDIUM-SIZED ENTERPRISES (SMES). <https://stats.oecd.org/glossary/detail.asp?ID=3123> Date of access: 03 September 2020.

Omniaccounts. 2019. The History Of Enterprise Resource Planning (ERP). <https://www.omniaccounts.co.za/articles/history-of-enterprise-resource-planning> Date of access: 03 August 2020.

Patalas-Maliszewska, J. 2013. Assessing the Impact of Erp Implementation in the small Enterprises. *Foundations of Management*, 4(2):51-62.

Pressbooks. 2014. Sampling in qualitative research. <https://scientificinquiryinsocialwork.pressbooks.com/chapter/10-2-sampling-in-qualitative-research/> Date of access: 01 September 2020.

Qu, S. & Dumay, J. 2011. The qualitative research interview. *Qualitative Research in Accounting & Management*, 8:238-264. 10.1108/11766091111162070

Rajapaksha, M. & Singh, M. 2012. Alignment of global business operations with ERP Systems capabilities for improved business performance. *18th Americas Conference on Information Systems 2012, AMCIS 2012*, 5:3402-3413.

Rocha, Á., Angélico Gonçalves, M., Ferreira-da-Silva, A., Teixeira, S. & Silva, R. 2021. Leadership challenges in the context of university 4.0. A thematic synthesis literature review. *Computational and Mathematical Organization Theory*, 10.1007/s10588-021-09325-0

Rosa, W.P., T; Krupanand, A; Bilbro J. W & Hodal, M .M. 2012. COTS integration and estimation for ERP. *Journal of Systems and Software*, 86:538-550.

Rouse, M. 2020. implementation. <https://searchcustomerexperience.techtarget.com/definition/implementation> Date of access: 03 September 2020..

Salum, K., Zaidi, A. & Abd Rozan, M.Z. 2015. Barriers and Drivers in Cloud ERP Adoption Among SMEs. *Journal of Information Systems Research and Innovation*, 9:9-20.

Saunders, M., Lewis, P. & Thornhill, A. 2012 Research Methods for Business Students 6. Pearson Education Limited

- Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., ... Jinks, C. 2018. Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality & quantity*, 52(4):1893-1907. 10.1007/s11135-017-0574-8
- Sarkar, R. & Kareem, J. 2015. Factors Influencing ICT adoption by Faculty in the Teaching Learning Process. *Artha - Journal of Social Sciences*, 14:45. 10.12724/ajss.32.5
- Saxena, D. & McDonagh, J. 2020. Exploring Enterprise Information Systems Procurement in Public Service Organisations. 18:54-68. 10.34190/EJEG.18.1.005
- Selecthub. 2019. Top ERP Software Comparison List. <https://www.selecthub.com/erp-software/>
Date of access: 03 August 2020.
- Singh, A., Sharma, S., Kumar, S. & Yadav, S. 2016. *Overview of PaaS and SaaS and its application in cloud computing*.
- Silva, L.F., H. K. 2012. From disruptions to struggles: Theorizing power in ERP implementation projects. *Information and Organization*, 22:227-251.
- Ullah, A., Baharun, R., Khalil, B., Siddique, M. & Sami, A. 2018. Enterprise Resource Planning (ERP) Systems and User Performance (UP). *International Journal of Applied Decision Sciences*, XI:377-390.
- Vayyavur, R. 2015. ERP Implementation Challenges & Critical Organizational Success Factors. *International Journal of Current Engineering and Technology*, 55:2759-2766. 10.14741/2277-4106
- Qu, S. & Dumay, J. 2011. The qualitative research interview. *Qualitative Research in Accounting & Management*, 8:238-264. 10.1108/11766091111162070
- Zhao, B. & Tu, C. 2021. Research and Development of Inventory Management and Human Resource Management in ERP. *Wireless Communications and Mobile Computing*, 2021:1-12. 10.1155/2021/3132062

ANNEXURE A: INTERVIEW QUESTIONS

This interview is voluntary, and participants will be anonymous unless permission to use your name is granted.

- You have the right not to answer any question you are not comfortable with.
- Information collected during the interview will remain confidential and properly analysed.
- Interview information will be safely stored.

1. What is your role at the company?
2. Which ERP system are you using?
3. What factors do you think would lead to a successful implementation of ERP?
4. What factors are considered/used in the selection of an ERP package?
5. What characteristics define a successful ERP implementation? What would you say makes an ERP implementation a success?
6. What challenges in the ERP implementation will likely affect business value and overall performance?
7. What stage of change management is critical when implementing Enterprise Resource Planning?
8. What is the main reason for Small and Medium Enterprises to implement Enterprise Resource Planning?
9. What challenges do you think to have an overall impact on the overall performance of the business?
10. What factors are considered before implementing Enterprise Resource Planning in a Small and Medium Enterprise?
11. Do you think Enterprise Resource Planning module selection for SMEs can be classified as a challenge? How so?
12. Which stage of Enterprise Resource Planning implementation should receive more attention to achieve higher implementation success?
13. Why did you choose to go through with the ERP implementation?
14. How was the decision reached to implement the ERP solution?
15. What positions and key departments were involved in the decision? Why them?
16. In which way was the incoming ERP Solution communicated to the organization?

17. Were there any organizational adaptations to the ERP or was the ERP adapted to the organization?
18. What did the organization look like before Solution implementation?
19. What does the organization look like today? (After implementation)?
20. What effects were desirable to achieve?
21. What preparations were made within the organization before the implementation? where there any plans?
22. How was the implementation perceived by system users?
23. Where there any differences with the work around the implementation between the different parts of the organization? Why? Why not? In what way?
24. Did external partners (Consultants or implementation partners) have any influence in the implementation (Customers etc)? How? Why?
25. Do you trust the information in the ERP system?
26. What support were you given during the Post-implementation? was it Good? or Bad?
27. Where all the stakeholders involved in the Pre and Post implementation of the ERP system?
28. Who do you think is responsible for change management, and when should it be done?
29. What issues did the organisation encounter after post-implementation?

ANNEXURE B: ETHICS APPROVAL



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Economic and Management Sciences Research
Ethics Committee (EMS-REC)

21 April 2021

Dr N Ndlovu
Per e-mail
Dear Dr Ndlovu

EMS-REC FEEDBACK: 26032021 (Round Robin)
Student: Pitso, TE (21489718)(NWU-00050-21-A4)
Applicant: Dr N Ndlovu - MBA

Your ethics application on, *Exploring the challenges in implementing enterprise resource planning systems in small and medium-sized enterprises*, which served Round Robin, refers.

Outcome:

Approved as a minimal risk study. A number **NWU-00050-21-A4** is given for one year of ethics clearance.

Please note that the ethics approval of this application is subject to the Covid-19 protocols.

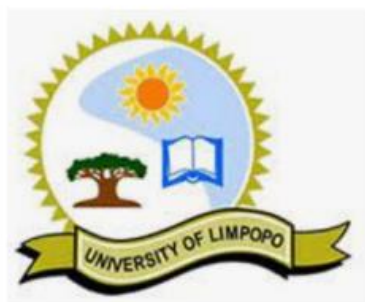
Kind regards,

Mark
Rathbone

Digitally signed by Mark Rathbone
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Prof Mark Rathbone
Chairperson: Economic and Management Sciences Research Ethics Committee
(EMS-REC)

ANNEXURE C: EDITING CERTIFICATE



Thunyelwa Godongwana
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08 Dec. 21

To Whom It May Concern

This is to confirm that I have done language editing on the required sections of the following mini dissertation:

Title:

Exploring the challenges in implementing enterprise resource planning systems in small and medium-sized enterprises

Author:

Tebogo Edward Pitso (North West University, Student no: 21489718)

Do not hesitate to contact me if the need arises.

Many thanks and regards,



Dr. T Godongwana (PR: 8764434)