Exploring the factors affecting implementation of Enterprise Resource Planning in South African Small and Medium Enterprises

A Dissertation Submitted in Partial Fulfilment of the Degree of

MAGISTER TECHNOLOGIAE

In the

Department of Quality and Operations Management

At the

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

Of the

UNIVERSITY OF JOHANNESBURG

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2019

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DECLARATION

Tankiso Pearl Phutsisi, herewith declare that this analysis or study is done by ME. it's presently submitted in accordance with masters degree of Engineering in University of Johannesburg. It hasn't been submitted or used anyplace previous.

ACKNOWLEDGEMENTS

I would like to thank God who made this possible despite the challenges I came across throughout this journey.

Thank you to   the following people for their contribution and support:

- ❖ **My supervisor:** Prof. Clinton Ohis Aigbavboa, for the input you provided without you this would have been impossible.

- ❖ **My Co-supervisor:** Dr Ndala Yves Mulongo, for being my co-supervisor .

- ❖ **Statkon:** Jaclyn De Klerk for the consultations and also ensuring that I get the guidance that was very helpful for my research.

- ❖ **University of Johannesburg:** Most importantly the Department of Quantity and Operation Management giving me the opportunity to study with them.

- ❖ **Questionnaire respondents:** Thank you to all the respondents for filling in the questionnaires, your contribution is highly appreciated.

- ❖ **My late mother and siblings:** I will like to thank my late mother Matshediso Belina Phutsisi (Moloi) for believing in me and supporting me in everything I do. Will also like to sincerely thank my siblings and aunt who are taking care of my son back at home when I'm here following academic career.

ABSTRACT

Enterprise resource planning (ERP) structures are one among the key instruments that data systems use to encourage fast decision-making, cost minimization, and comprehensive internal control. South African Small to Medium Enterprises (SMEs) have begun to acknowledge ERP systems as a vital tool within this marked improvement in Information Technology (IT). However, literature on this subject indicates that structure expectations and wishes don't seem to be met by the overall public on the implementation of ERP. Over one half of the ERP implementations in SMEs have recently been evidenced to fail, as revealed by research studies. Essentially, the components linked to the accomplishment of ERP execution are not fully studied in South African SMEs. In addition, the excessive failure of ERP implies a threat to South Africa, because SMEs are the foundation of the South African economy.

To achieve the abovementioned goal, this study adopted a two-sided approach; firstly, the researcher critically analysed a set of previous studies that were conducted on ERP implementation within various business organisations. This helped in identifying gaps existing in the current literature. A questionnaire approach was used with three different firms located in South Africa, particularly in the province of Gauteng. The respondents were chosen by means of a convenience sampling approach, because it enabled the researcher to select participants that were easily accessible.

PREFACE

The work presented in this masters thesis was conducted at the Department of Quality and Operations Management within the Faculty of Engineering and the Built Environment of the University of Johannesburg under the Supervision of Prof. Clinton Ohis Aigbavboa

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LIST OF ABBREVIATIONS

ERP	Enterprise Resource Planning
ERP	Enterprise Resource Planning
IT	Information Technology
IS	Information System
CEO	Chief Executive Officer
GDP	Gross Domestic Product
TOE	Technology, Organisation, and Environment
BPR	Business Process Reengineering
TOE	Technology, Organisation, and Environment
BPR	Business Process Reengineering
MRP	Material Requirements Planning
MRPII	Manufacturing Resource Planning
SSA	Sub-Saharan Africa
SSCM	Sustainable Supply Chain Management
SMEs	Small and Medium Enterprises
ROI	Return On Investment
PQM	Process Quality Management
SA	South Africa
US	United States
UN	United Kingdom

CHAPTER ONE

INTRODUCTION

1.1 Overview

ERP is a strategic technique that helps companies gain competitive advantage through the integration of all business strategies and enabling of resource optimization. Through this, companies generate high-quality services and products within a restricted time span (Breakfield & Burkley, 2002). ERP systems provide numerous modules for a widespread database and comparable systems which service the whole organisation rather than just a part of it. Before the integration of ERP, employees had to retrieve information from two or more separate computing systems, thus making their job extremely difficult. Consequently, keeping data in one place and ensuring its availability to all employees serves as the motivation to know the present situation of the business and assists employees to improve their performance (Valacich & Schneider, 2012). Most organisations are currently in the process of implementing ERP systems to support their business activities. In addition, the market share for ERP vendors is continuously growing as a sign that a number of organisations are embracing ERP.

ERP systems assist organisations in achieving competitive advantage; they also add value by both providing increments in operational efficiency and organisational information which assists management to make better decisions (Laudon & Laudon, 2013). Some of the essential characteristics of ERP are its ability to automate and integrate an organization's business processes. It also enables access to information within the required time as well as sharing of common data and practices across the whole organisation. In addition, companies expect ERP systems to minimise their operating costs, maximise process efficiency, increase customer responsiveness and also provide information for decision making (Elgaral & Al-Serafi), 2011).

The process of implementing ERP is a complicated task and requires extensive planning and consulting. In addition, it needs time and money that will require adequate care. If these are not done accordingly, they will result in the failure of ERP implementation (Kumar & Gupta, 2012). Additional reasons for ERP failure can be attributed to coordination and budget issues, poor ERP selection, absence of consultants, an unfriendly user interface and customization problems. Moreover, other factors that can also contribute to the failure of ERP implementation are a lack of user participation and engagement, thorough system testing, documented system procedures and top management support and user training. When ERP implementation is effective, it can contribute to improved productivity, cost savings and profits.

1.2 Background

Enterprise Resource Planning (ERP) systems were previously structured in large organisations only. To be able to efficiently conduct business, various functional areas in the organisation must share data. In the past organizations often purchased systems that focused on the specific needs of the individual departments. In addition, even though such systems assisted departments to go about their day to day business activities effectively and efficiently, these systems were not helpful when people from one part of the organisation required information from another part (Valacich & Schneider, 2012). To cope with these issues corporations accepted the use of Enterprise Resource designing systems (ERP). Enterprise Resource Planning systems collect information from completely different key business procedures inside production, finance and accounting, sales and human resources and store the information in a single central data repository (Laudon & Laudon, 2009). This ensures that data is distributed to numerous systems to be shared among all the departments within the company.

ERP systems assist in achieving competitive advantage by both providing increments in operational efficiency and information that helps management to come up with better decisions (Laudon & Laudon, 2013). Some of the essential characteristics of ERP is the ability to automate and integrate an organization's business processes. In addition, it accesses information timeously and permits sharing of common data and practices across the whole organisation. Furthermore, ERP systems minimise operating cost, maximise process efficiency, increase customer responsiveness and also assist the organisation by providing information for decision making. Singla (2008) reported the accompanying substantial benefits of ERP execution:

- ❖ Reduced stock
- ❖ Reduced work costs
- ❖ Productivity improvement
- ❖ Procurement
- ❖ Technology cost decrease.

Enterprise Resource Planning (ERP) frameworks are thus intended to coordinate business capacities and methods (Mutongwa and Rabah 2001; Umble, Halft ,2003). Frameworks' inability to manage dangers and issues during their usage are experienced globally. Therefore, to manage specialized improvements while additionally guaranteeing profitability, open and private foundations have begun ERP execution (Cloete, Coutney, & Funz, 2002).

In addition, enterprise resource planning ensures that the customers' needs are adhered to which will result in outcomes that will provide required income (Lopez & Roubellat, 2008). McCarthy (2006) and Amponsah et al. (2011) reiterate that in most cases, ERP implementation deals with the unexpected problems and complications regarding the factors involved during the process of its application. In the past two decades, competition between various manufacturers has been growing at a rapid pace, and consequently, production managers have been forced to adopt a new philosophy of doing business in order to remain competitive and maximise profit.

1.3 Problem statement

Despite the importance of ERP implementation in manufacturing organisations, the existence of ERP systems within South African SMEs is unknown. The availability of ERP techniques has not changed the implementation of ERP by SMEs. SME organisations encounter problems as a result of their minimal resources and technical expertise. ERP systems that are lower in cost may encounter problems that are beyond financial issues. Therefore, a need exists to examine and establish user expectations regarding problems that can be encountered during the application of ERP. In addition, the implementation of ERP is examined to determine guidelines and a framework that focuses on today's dynamic environment focusing mostly in South African Small and Medium Enterprises. It is of importance that the information required for SMEs is understood together with the problems that they encounter in order for ERP implementation to satisfy customers' requirements.

1.4 Research questions

The following research questions were established:

RQ 1: How will the organisation measure the performance of Enterprise Resource planning (ERP) systems from a technical design perspective?

RQ 2: How will the association profit by executing an Enterprise Resource Planning (ERP) framework?

RQ 3: What is the motivation for implementing Enterprise Resource planning (ERP) systems in your organisation?

RQ 4 What are the factors to be considered when implementing Enterprise Resource Planning (ERP) system.

RQ 5 What are the barriers and challenges that can be encountered when implementing ERP systems.

1.5 Research goal

The general research objective of this study was to investigate the factors influencing South African Small Medium Enterprises when Implementing Enterprise Resource Planning. This will assist decision makers in this sector regarding the factors affecting implementation of such systems in SMES

1.6 Research objectives

In order to bring about the experimentation aim of this study; the subsequent objectives are proposed:

RO 1: To analyse to what extent literature on Enterprise Resource Planning systems has been approached from a holistic aspect

RO 2: To determine the challenges facing Enterprise Resource Planning implementation systems in Small Medium Enterprises

RO 3: To recommend strategies that management may adopt to improve the implementation of Enterprise Resource Planning systems within Small and Medium Enterprises

1.7 Research methodology

This study utilised a quantitative research method. This method was appropriate for the following reasons:

SMEs are associated with the accumulating of profit and creating opportunities for business growth. They're additionally target oriented and are mostly owner managed. This permits the use of a fast analysis methodology that may be easily achieved through a quantitative examination. Questionnaires were used to conduct this research, which incorporated closed-ended questions. Moreover, the questionnaire design followed the chronological sequence of the research objectives. It helped in assessing the status of implementation of ERP in South African Small and Medium Enterprises.

1.8 Aim of study

The aim of this study was firstly to provide a guideline for the successful implementation of Enterprise Resource Planning in South African SMEs. Secondly, it helped to ascertain barriers or

challenges encountered by these organisations as well as to acknowledge the attainable competitive edge which could be achieved by the implementation of ERP systems

1.9 Overview of chapters
CHAPTER 1: INTRODUCTION
The purpose of chapter one has been to provide an overview of the whole research study and the background information regarding the topic. The chapter also has told us about the research problem, objectives and research question. In conclusion the chapter stated how the research was conducted.

CHAPTER 2: THEORETICAL FRAMEWORK
The purpose of this chapter is to provide the views expressed by scholars regarding ERP practices in the small and medium sector; this has significant implications on this study. The views of scholars are used to provide the findings for the research. It begins with the introduction to the rationale behind Enterprise Resource planning (ERP) and goals that the organisation can achieve through this system. This is the result of the summation of previous studies on international ERP implementation within SMEs

CHAPTER 3: LITERATURE REVIEW: ENTERPRISE RESOURCE PLANNING
The purpose of this chapter is to determine how ERP systems are being implemented. The chapter will have an in-depth focus on the factors that will assist in achieving success in ERP implementation. The research evaluates the characteristics of ERP systems implemented in South African small business and medium businesses.

CHAPTER 4: SMALL AND MEDIUM ENTERPRISES IN SOUTH AFRICA
The purpose of this chapter is to provide an in-depth perspective as to how Small and Medium Enterprises (SMEs) contribute to GDP and development of monetary improvement of South Africa. This section concentrates on the job of the SMEs in South Africa and the contribution it has towards the development and advancement of the economy. In addition, it reveals and explains reasons why SMEs are unable to succeed.

CHAPTER: FIVE RESEARCH METHODOLOGY

The purpose of the chapter is to debate methods used to accumulate data, and also the results from this analysis are assessed. The methods used to analyse data for this study are quantitative techniques using factor analysis and descriptive analysis. The chapter in outlines the techniques that were executed in determining the reliability of the findings. The methodology carefully considers the details, and analysis sequence is stated. The chapter also investigates the following outline: reliability of the study, research approach and design, the use of quantitative data, research area, targeted area for respondents, research population, sample, data collection and instrument.

CHAPTER 6: PRESENTATION OF FINDINGS AND ANALYSIS

The purpose of the chapter is to supply the results gathered from the questionnaires sent to gather data from small and medium businesses within Gauteng province of the Republic of South Africa. The examination of this data and translations of its outcomes were obtained through the organized survey analysis.

CHAPTER 7: Discussion of findings

The purpose of the chapter is to analyse factors which will have an impact on the implementation of Enterprise Resource Designing in South African Small and Medium Organisations. The previous chapter established the factual data been gathered from surveys. This data was provided through the use of descriptive statistics. Findings utilized Tables and bar graphs to clearly state the findings. The chapter reviews and results of the analysis

CHAPTER 8: Conclusion and recommendations

The purpose of the chapter is to analyse the factors which will have an effect on the implementation of enterprise resource designing in South African small and medium organisations. The main focus is to debate the findings from the analysis of questionnaires. The findings are reviewed in light of the literature discussed in Chapters three and six. This shows whether the research objectives are answered from the information analysis in Chapter six. The chapter discusses the results that are obtained from the findings and supplies the desired recommendations.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Introduction

This chapter provides views expressed by other scholars regarding ERP practices in the small and medium sector.

2.2 Critical success factors (CSF) for international Enterprise Resource Planning (ERP) implementation

(Hawking, 2000),), reiterate the fact that when developments are encountered during the implementation of ERP, this acts as motivation for more companies locally and internationally to find the need to implement ERP.(Plant and Wilcocks; Hawking, 2000). There is a prevailing consensus in the literature as well as the former research concerning the critical success factors (CSF) in ERP adoption. In contrast to inadequate pointers to the critical success factors (CSF) for international implementation, table 2.1 provides a summary of the critical success factors (CSF) related to the past studies. Researchers have reached various conclusions concerning which might be the essential factors for global ERP implementation. Those factors will be discussed in detail in other parts of the chapter concerning critical success factor (CSF) management style and execution.

Table 2. 1: Critical success factors for international Enterprise Resource Planning (ERP) implementation

Source :(Hawking, 2000)

No.	Authors	Nature of Study	Quantitative	Qualitative
1	Sheu et al (2004)	Jonkoping University international business school	X	
2	Plant and WIllcocks et al (2007)	University of Kassel,		X
3	Hawkings et al (2000)	University of Alabama, Tuscaloosa	X	
4	Krumbholz and Miden et (2001)	Lunghwa University of Science and Technology	X	
5	Markus et al (2000)	Universidade Nove de Julho	X	
6	Yen and Sheu (2003)	Faculty of Management Studies, University of Delhi	X	
7	Carton and Adam (2002)	Shanghai University of International Business and Economics	X	X
8	Madapusi and D' Souza et al (2017)	National Chi Nan University	X	
9	Jose" Manuel Esteves de Sousa et al (2017)	University of Polecnia de Catalunya, Spain		X
10	Alfed Bjobback et al (2000)	Economics department , University Of Technology, Chalmers Sweden	X	
11	Daniel O' Learny et al (2016)	Leeds Metropolitan University Leeds City United Kingdom		X
12	Mohammed A. Rashad et al (2002)	Massay University-Albany, New Zealand		X
13	Arridsson & Kojic et al (2017)	Jonkeping University International Business School		X

The ERP method is the primary stage of the recommended framework by Markus et al. (2000). These researchers address the problem of centralized vs, decentralized relations between organisational systems of ERP and their perspective establishment as well as the Globalization and Configuration of commercial enterprise approach.

Modapuse and D'Sauza (2005) similarly discovered that the link between the ERP approach and the business method is a critical success factor (CSF). They determined that the dispositioning of a company's international ERP system with its global approach is one of the primary reasons for delayed or failed ERP implementations (Madapusi and D'Sousa, 2005).The international organisations' strategy for this context may be mentioned with the 5 structural firm's patents (Madapusi and D'Sousa, 2005). These include total local autonomy, where subsidiaries are free to make decisions on their own (Markus et al., 2000). Although not without positive effects such as avoiding conflicts deriving from changes promoted by headquarters, this pattern typically fails to take advantage of the full potential of ERP system (Marcus et al., 2000). Firms acting according to this pattern, but still choosing to implement ERP might have trouble (Sheu et al 2004). This can result in repercussions and most execution determinants include selecting the mostly used ERP practices which are assigned limited space. Most of the companies which bought the ERP system implemented and maintained it on their own without consulting others.

Headquarters control only at a financial level or multinational strategy (Markus et al., 2000; Madapusi and D'Sousa, 2005), hence business units are left with total autonomy but are linked to a common headquarters for financial reporting. This is therefore suitable when a company offers differentiated products aimed at a local market (Madapusi and D'Sousa, 2005). Headquarters coordinates operations through headquarters managers and the global supply chain making use of local information from each side provided by the ERP system. Still, each subsidiary has a high level of autonomy in this pattern, but the pattern is best suited when there are corporate benefits from common purchasing. Headquarters play a major role in managing the ERP implementation in this pattern (Markus et al., 2000).

Markus et al (2000) propose a network coordination or transactional strategy of operations. In this pattern, local units have access to each other's information in this pattern; local units have access to each other's information through the ERP system (Markus et al., 2000). This is typically, with the centralized financial configuration, but with multiple operations (Madapusi and D'Sousa, 2005). it's a useful strategy when the business units sell to each other and to external customers. Implementing projects of this kind requires global cooperation between headquarters and subunits. Moreover, companies are trying to achieve local differentiation of products with the inclusion of global economic efficiencies (Madapusi and D'Sousa, 2005).

 Markus et al. (2000) refers to total centralization or global strategy as all decisions being made centrally with a single and centralized financial and operational configuration. This study proposed a top-down approach to ERP implementation projects which is most useful when an organisation wants to project one common face or brand towards its customers (Markus et al., 2000). Furthermore, with products standardization and global sourcing, those organisations that are performing in exceptional highly competitive markets are expected to adopt a more streamlined

pattern (Sheu et al., 2004). In addition, the total streamlined operation within a less aggressivemarket is regarded as more acceptable by subsidiaries under the external pressure from the market. It is therefore established that none of the above styles is more correct than the others. However, the level of centralization in a corporation and how an ERP system could be high quality should be appropriate for the particular organisational styles. This means that having alignment between the enterprise method and the ERP strategy is essential (Madapusi and D'Souza 2005; Markus et al., 2000; Sheu et al., 2004). Sheu et al. (2004) further discovered that the positioning between the strategies of ERP and commercial enterprise approach influences an ERP implementation. Besides, the organisational strategy affects the reputable relations between sites or subsidiaries. Therefore, sizeable cultural variations among business devices in addition to those cultural differences are crucial components in global implementation as will be described within the following section.

2.3 Cultural and language

When taking into consideration past studies affecting the global dimensions of ERP implementation, culture is the essential factor within the implementation of ERP. It occurs mostly in discussions, and it regarded as a unique critical success factor (CSF) (Zhang et al., 2005). Authors like Hawking (2000); Krumbbholz and Maiden (2001); Sheu et al., (2004); Yen and Sheu (2004); and Zhang et al. (2005) have also discussed the effects of cultural differences on international ERP project implementation. Influential authors had seen it as the supporting aspect which describes the impact that cultural dimensions have in organisations and how this affects international change in projects.

Language difference, which is related to the cultural dimension in international ERP implementation and is treated under the same critical success factor (CSF) in this study, can provide both technical and managerial difficulties (Sheu et al., 2000). However, as stated previously the main challenges associated with ERP projects are not technical but rather in relation with organisational change and other factors (Carlton and Adam, 2003). Centralizing international ERP implementation has provided hard to implement as a result of cultural variations. For example, Sheu et al. (2004) diagnosed strong resistance to new and standardised operating ERP implementation tasks in a US subsidiary / Taiwan headquarters organisation. Numerous US personnel even threatened to resign in the event that they were forced to change to the lifestyle and tactics of the Taiwanese headquarters (Sheu et al., 2004).

Hofstede et al.,2005) focussed on the factors and dimension that are affecting national and organisational culture. Hofstede identified five dimensions of national culture which included power distance, uncertainty avoidance, individualism, masculinity and time orientation (Hofstede

et al., 2005) When deriving the 5 dimensions, Hofstede et al.,2005 considered the unique effect that energy distance and uncertainty avoidance have on establishments. Power distance has been described as the extent to which fewer effective people within the organisation accept the unequal distribution of power. Subordinates expect a consultative function towards their superiors and are not scared to impeach their superiors. Uncertainty avoidance defines the manner into which humans are prepared to accept uncertainty and ambiguity, along with acceptance of vague task descriptions Hofstede et al.,2005) .

2.4 Management style and execution

The management control style in global ERP implementation tasks has an immediate impact on the method and period of the initiatives (Sheu et al., 2004). Management control in this context refers to the selection and the execution of the useful resource allocations to the mission. Zhang et al. (2005), states that each element of the business enterprise should record ERP initiatives and that everyone including the departments involved must be accountable or chargeable for the overall device and key users. The prospective departments are made to commit to the implementation of the projects (Zhang et al., 2005).

Practical execution is   the fourth level of the framework as stated (Markus et al., 2000). The execution of implementing ERP may be either be through a large deployment or through a phased rollout. Sheu et al. (2004) discovered that big strategies are more usual in Asian countries, whereas, in the US and other western countries rollout is a usual norm. Additionally, ERP implementation time is less than in Asian countries (Sheu et al., 2004). Taiwan and China are comparable to in most western countries. Carton and Adam (2003) noted that during the rollout phases, all sites are expected to implement the system according to a common template. This is the same for all sites no matter what local differences exist. On the one hand, this strategy provides a good opportunity to review and standardize operations and business processes to align with the ERP system imperatives and to achieve the greatest benefits (Somers and Nelson, 2001). On the other hand, the process can be a nightmare for local managers who have spent years tuning local operations and adapting to specific local requirements. Carton and Adam (2003), are therefore sceptical towards this global streamlining of processes and find it difficult to see how this can be beneficial to either local sites or global corporations (Carton and Adam, 2003)

2.5 Vendor and consultants

In international ERP implementation projects, the consumers –vendor proximity is considered an issue. Research has shown that problems with education, communication, and high cost of the

international ERP implementation is often due to the sizeable distance between the vendor / specialists and the customer's subsidiaries (Sheu et al., 2004; Plant and Willcocks, 2007). Sheu et al. (2004) advocate that control must consult and negotiate with ERP software providers prior to implementation to achieve additional assistance to reduce prices regardless of the distance.

The role that vendors and consultants play in international implementation of ERP is mostly in relation to the education of new business routines. Firstly, within the context of international implementation of ERP, a large distance between vendors training facilities and client's locations increases the cost associated with training. Secondly, customizing the ERP system, and the cost related to training, will further increase due to the international context and large distances. This is in relation to the third issue of the client organisation possibly having to develop and perform its own international education of those customized functionalities, which is a non – core activity for the client organisation. This may further increase the cost associated with training (Plant and Willocks, 2007).

2.6 Regulations and Legislation

Legislation and regulations related to unique regions or countries which includes taxation can maximise the hard work encountered during the international implementation of ERP projects and the training associated with it (Plant and Willocks, 2007; Sheu et al., 2004; Yen and Sheu, 2004). According to Plant and Willicocks (2007), the Scandinavian vendors firstly encountered problems when capturing the USA tax system as a result of this being different from the Scandinavian taxation system. This gained attention because the vendors had to improve the system that also resulted in cost increments for the client.

An additional measurement relates to ways and the manner in which the governmental guidelines can affect worldwide ERP implementation initiatives through the diplomatic and exchange regulations. Yen and Sheu (2004)   use the example of the diplomatic relations between Taiwan and China. This was because the two countries had strict guidelines on transporting items and exchanging statistics. To make any of those modifications among subsidiaries, third countries have been established and used as intermediaries in all transactions.

2.7 Why enterprise Resource Planning?

Enterprise resource planning (ERP) systems are always regarded as the most essential and effective information management tools for small, medium and large organisations. (Francios et

al., 2009). Also, the system is executed by SMEs as a way to improve and cut costs (Snider et al.,2009; Dixit and Prakash,2011). Nowadays SMEs are very essential in economies, and they are similar to large organisations which are encountering problems such as increased globalization & competitive pressure. Consequently, they must improve their competitive edge for business by ensuring reliable and secure information systems which will provide exceptional business intelligence, transactional efficiency and collaboration power.

Enterprise Resource Planning (ERP) systems develop the largest investment that is creating information technology for various organisations (Summer, 2003). These are the information software systems which consolidate and link all business parts. In this instance the business has the ability to deliver information within the functions of the company such as supply chain management, manufacturing, distribution, sales, marketing, accounting and human resources (Bingi, Sharma & Godla.,1999; Markus et al., 2000). The customer also can shape the system with add-on modules so that they can satisfy   their specific needs (Rashid et al., 2002).

Upadhyay et al. (2011) contend that ERP provides important infrastructure which solidifies the transactional system and operations for business of any size. Nonetheless, during the nineties, when ERP started to be used regularly, it was regarded as unaffordable and very complicated for smaller companies and was used only in larger organisations. However, the customers within the nineties decided to focus more on SMES after saturation of the market for large organisations. Moreover, there was a lack of any better suited and cheaper systems for SMEs (Everdingen et al., 2000).

Chalmers (1999, p.46) has written that "small manufacturing has needs that are complicated like their large counterparts, and they have also targeted affordable ERP tools and strategies that are in existence for organisations so that they are competitive, and they have the possibility to improve. Additionally, when organisations have ERP systems in place this will assist with growth "(Chalmers, 1999).

However, not all SMEs may improve from the ERP systems. For example, Sharma (2011) has written: "Not all SMES will improve from the experienced strategy as well as the strategic tools such as ERP. It is most appropriate to ask why organisations in generally and SMEs particularly will like the implementation of ERP system".

The decision to implement ERP is therefore critical because the result of failed ERP implementations may have severe side effects for the whole company (Bulkeley, 1997). The liquidation of Foxmeyer, the pharmaceutical giant, demonstrates a famous example of failed ERP system implementation which resulted in grave operational disruptions combined with the exorbitant expenses for the implementation, leading to the liquidation (Strein, 1998). The high

implementation of ERP within projects is regarded as not being successful. For example, overbudgeting over-time leads to failure to achieve objectives (Holland and Light ,1999).

A partial basis for ERP systems is improvement within the decision –making which is achieved through increased available information (Shang and Sedden, 2000; Poston and Grabski, 2001.

SMEs businesses range from very small micro-firms run by one or two persons and very slow growth or no growth to fast growing medium businesses earning millions of dollars and majority employing as many as 250 employees (Fjose et al., 2010). The businesses' definitions also vary from those requiring little money to start to others demand millions of dollars to start (Adisa, Abdulraheem, & Mordi, 2014). Various sectors in different parts of the world focus on certain indicators to define SMEs among them number of employees, total number of assets, annual turnover and capital investments (Gibson & Vaart, 2008).

Shang and Sedden (2000), alternatively, expand on their view and present the framework which includes five important business benefits that senior management can anticipate from ERP:

1. Operational benefits: reduction of cost, reduction of the cycle time and improving customer service
2. Managerial benefits: improved decision–making, better controlling of performance and better resource management
3. Strategic benefits: a changed culture with a vision to empower and support business organisational change within various SMEs.
4. Information technology organisational advantage
5. Infrastructural advantages, like support of business infrastructural change, empowerment

Furthermore, the reason for the implementation of ERP system by SMEs is that it enables them to compete more globally. The utilization of ERP systems within the international establishment always results from the international standardization of business procedures. That has the ability to provide the organisation to trade from the international perspective (Carton and Adam, 2003). Shang and Sedden (2000) additionally contend that ERP systems provide business benefits which enlarge global expansion through central world operations. This includes international resource management, multi –currency ability, international market penetration and the distribution of results as well as efficient costs globally.

2.8 Critical Success Factors (CSF) for implementation in SMES

It has to be reiterated that the benefits of ERP systems can only be achieved when the implementation thereof is successful within the establishment. The fundamental risk for failures within the ERP system implementation is always not in relation to technical issues, but rather in relation to business problems like unwillingness to change (Jarrar et al., 2000). In order to reduce this type of risk and ensure success with the implementation, most researchers have been using the critical success factor (CSFs) technique.

Table 2.2: Critical factors for ERP implementation in SMEs

Source: (Jarrar et al., 2000)

Authors	Type Of Study	Top Management Support	Project Management	Project Team	ERP Process Change	Change Management	External Consultants	Commercial	Strategy Planning
Muscatello et al. (2003)	Case study	X	X	X	X	X	X	X	X
Snider et al. (2009)	Case study	X	X	X	X	X	X	X	
Federecu et al. (2009)	Questionnaire survey		X		X		X	X	X
Doom et al. (2010)	Case study	X		X	X	X	X	X	X
Kale et al. (2010)	Questionnaire survey	X		X	X		X	X	
Malhotra et al. (2010)	Literature Review	X	X	X		X	X	X	X
Upodhyay et al. (2011)	Questionnaire survey				X	X			X
Basu et al. (2011)	Questionnaire survey	X	X		X	X	X	X	
Shaul et al. (2012)	Questionnaire survey	X		X	X	X	X	X	X

2.9 Top management support

Top management support is the predominant critical factor within past investigations and appears to be the predominant consensus in relation to the success for the CSFs. Only Soja (2006) appears to differ from this, as his solution has indicated that top management supports the engagement and their necessity within large organisations when compared to small ones. Snider et al., (2009), contested that top management cornerstone may be "applicable within the SMEs resulting in their close –knit work environment ". Additional is their high association within the SMEs standards, excluding their impact on resource allocation and informal communications "(Snider et al., 2009). SMEs are regarded to have low levels of hierarchy, within which the CEO has to lead the organisation strategically and who is also involved with decision-making of the operation (Huin, 2004; Levy and Powel, 2000). This means that the CEO can be the driver of ERP projects as well as the member of the project team which will also affect the result afterwards. (Huin et al., 2004).

Gable and Seward (1999) furthermore noted that CEO authority is a normal characteristic for SMES, and which also influences ERP implementation positively by enabling top management to have extensive control. They also point out that it can also have undesirable effects, but this can be due to the CEO having problems in assigning responsibilities and distributing information. Snider et al. (2009) propose that top management has the ability to affect the result of the ERP projects by ensuring that they provide the essential support for training and quality consulting. "SMEs needed technical experience; therefore, the necessity of this type of funding became evident." top management within SMEs are always anticipating quick returns on their investment and as a result are unlikely to allocate more resources to training, for example, which therefore may not succeed (Snider et al., 2009).

Additionally, it rests on top management to determine the degree to which team members are released from normal responsibilities of the project's implementations (Snider et al., 2009). The authors established that this might inspire team members, even though they are briefly relieved from their normal duties at the beginning of the implementation, since "team members were still positively impacted by manager's sheer gesture to support their time in the project, despite of the actual results" (Sider et al., 2009). Top management thus plays a momentous role in the facilitation of the most essential changes that may come with the ERP implementation (Argyropoulou et al., 2007). They may destroy the implementation of projects by not accomplishing the ERP adoption, which will need restructuring and by their reluctance to changing

the manner in which they do their business (Levy and Powel, 2000; Dixit and Praaka, 2011). The current discussion will be more under the CSFs change management. The best way for making sure that top management supports the SME is to assign as project leader, a person from the executive level e.g. the CEO (Shaul and Tauber, 2012). Eshelman et al., (2001) also found that, "Having the CEO as project co-leader has shown to be more valuable in maintaining operations communication with top management".

Table 2.3: Summary of top management as a critical success factor (CSF)
Source: (Snider et al., 2009)

SME property	Components
CEO involvement within Operations activities	The support of top management is important within the SMES because of its high involvement in both operations and strategic decisions. In addition, it can be either a positive or negative influence on the outcome.
Lack of IT and resources	Top management in SMES will destroy the project by not assigning enough resources for training etc. (Snider et al., 2009; Upadhyay et al., 2011) or failing to realize that the adoption will need restructuring (Levy and Powel,2000).

2.10 The project team

Additionally, in order to appoint suitable project champions, the right project team must be allocated, with the team involvement and composition being the most important aspects of success (Soja et al., 2006). The team also requires a good project leader as well as the appropriate mix of the internal staff and the external consultants (Doom et al., 2011). It must have the appropriate team structure (Malhotra and Tampeni,2010) (See Table 2.4).

SMEs that have adequate human resources which are dedicated to the entire ERP project are regarded as essential to the accomplishment of the successful outcome within the ERP implementation (Shanks et al., 2000; Mabert et al., 2003; Umble et al., 2003). In addition, the team structures must be considered, where team members will work part time with projects and

how they should successfully implement while still considering the cost, as well as the time that will be used to effectively put projects in place (Malhotra et al., 2010).

In addition, Snider et al. (2009) has established that project teams within SMEs were not entirely for the projects and influenced the outcome negatively. This may also affect thee hard-working culture of SMEs, because employees are required to be adaptable and take more responsibilities as needed. This is coherent with the study by Eshelman et al. (2000) which showed that where employees are more committed in the implementation of the projects, they double the value throughout the implementation period so that they do not fall behind in their regular duties.

A strong team structure permits the project manager to act as the project champion. This is achievable because it involves the lower levels of the company's hierarchy within the SME (Malhotra et al., 2010). The authors think there is a change that is unattainable within larger establishments. This is bound to happen where managers always have particular responsibilities. This may result in complications and variance in the implementation of projects that smaller establishment are removed from (Malhotra et al., 2010).

Table 2. 4: Components of the project team CSFs and the related SMEs properties

Source: (Malhotra et al., 2010)

SME Property	Solutions
Lack of financial and Human resources	A completely devoted team and CSF for SMEs (Snider et al., 2009). A strong structure permits the team members to work part time and keep up with operational activities (Malhotra and Temponi, 2010). It may be essential for employees to work overtime during the implementation of projects (Eshelman et al., 2000; Snider et al., 2009).
Lack of IT Skills	A good mix between consultants and international staff (Doom et al., 2010)

To be able to supplement the project team within the areas where the teams do not have required knowledge and expertise, the relations between the customers and the establishment as well as the external consultants is essential for SMEs, because of their inadequate technical

understanding, (Snider et al., 2009). This will be explained in depth in the section on vendors and consultants.

2.10.1 Project Management

This may be the most essential factors of SMEs, because efficient project management may be difficult to find within the SMEs (Buona et al., 2005). This is because they usually have limited expertise from implementing projects of IT-systems as a whole (Zach et al., 2010). Moreover, SMEs always have the most self-absorbed management ideology, and are therefore less likely to follow normal models of good implementation practise (Gable and Steward, 1999). Similarly, Argyropolou et al., (2007) contend that SMEs "do not follow a structured methodology for ERP system implementation ". Usage of external consultants to head the implementation of a project could however assist, as they always have the most experience in project management (Snider et al., 2009). The authors additionally underline the necessity of the project's documentation, because project teams within SMEs always have to finish daily activities that are competing with the implementation of the projects. Therefore, they may place the essential project documentation as the lower priority.
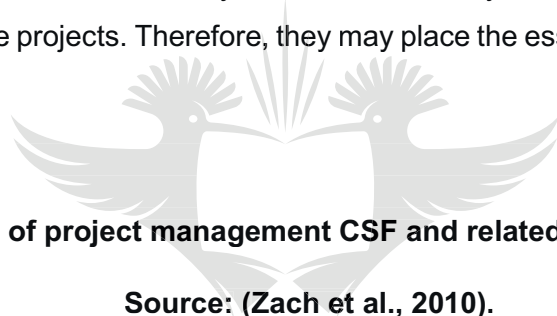
Table2.5: Components of project management CSF and related SME properties

Source: (Zach et al., 2010).

SME Property	Solutions
Lack of management and IT Skills	External consultants may be the exceptional leaders, since they have more experience within project management (Snider et al., 2009)
Lack of human resources	It is crucial to make time for projects documentation, that may get minimal priority in SMEs where project team members also have to complete their daily tasks (Snider et al., 2009)

Muscatello et al. (2003) established that the essence for the success of ERP implementation is a strong relationship between ERP investment and the strategy. Doom et al. (2010) also established that a clear vision of the strategic goals of ERP implementation is regarded as one of the essential CSFs for SMES. (See table 5).

It is therefore important to state the view of ERP implementation; also it is vital that everyone within the establishment has the knowledge as to why ERP is being implemented; it is crucial that top management must talk about this when managing change with employees (Malhotra and Temponi, 2010).

These types of relations can therefore be difficult to accomplish within the SMEs because SMEs always have survival as their focal point. Deep-rooted strategies therefore always get a minimal priority (Sharma et al., 2011). The result of this is inadequate strategic planning of IT-systems (Buonanno et al 2005). According to Argropoulau et al. (2007), in situations where SMEs decide to implement ERP. it is always done as a "reaction to competition". Large organisations may be regularly involved in ensuring more informed decision –making while still looking at other benefits. Additionally, Malhotra and Temponi (2010) propose that some SMEs adopt ERP mainly because of cost and strategic suitability.

Table 2. 6: Components of strategic planning for CSF and related SME properties

Source: (Malhotra and Temponi, 2010)

SME Properties	Solutions
Less long –term strategy planning	Sufficient implementation strongly relates to the investment to strategic planning (Muscatello et al., 2003; Soja ,2006) It is important that most people have knowledge as to why ERP systems are being implemented (Malhotra and Tempori, 2010). Formal strategy is not important in SMES, either due to implicit strategy or inexistent strategy (Snider et al., 2009)
Less –strategic IT planning	ERP investment always done as "a reaction to competition (Argropoulou et al., 2007) SMES choose ERP based on cost rather than on what may be strategically suitable (Malhotra and temponi,2010)

Laukkanen et al, 2007, discovered limited support for this, but also established that "medium sized establishment emphasizes the most strategic business development goals of ERP implementation more importantly within the small organisations".

Snider et al. (2009), alternatively did not discover CSF to be the official strategy but also had the following illustration for this:

"Firstly, legacy systems may be insufficient in which improvements were achieved regardless of the strategic alignment. Secondly, SMEs staff may be implicitly cautious to the strategic view to incorporate the view into project plans".

2.10.2 Business process and ERP fit

Business procedure change is the consideration and the contention of CSF within the ERP implementation (see table 6). This CSF relationship determines whether the business procedure must be adjusted to suit the ERP system in order to customize the present business process. Some regular change in procedure is essential "it could be worth taking into account a simpler and less radical approach that considers BPR merely a possible activity following the implementation of ERP system" (Quiscenti et al., 2006). Malhotra and Temponi (2010) determine that a system that works well will also need minimum customization. Additionally, this will also reduce the need for ongoing support which may be more essential for SMEs that do not have enough resources to support the system after the implementation (Argyropoulou et al., 2008). Shaul and Tauber (2012) discovered a poor fit between ERP systems and a number of organisations they evaluated. This resulted in "more software procedure customization, more cycles of re-implementation, greater complexity, increment in resources and longer project schedules" (Shaul & Tauber, 2012).Federici (2009), found that one of the factors that influences the outcome of an ERP implementation the most is to use small, national ERP procedure as they "seem to fit better the needs and culture of SMES

Table 2.7: Components of business process as CSF and related SMEs properties

Source: (Federici et al., 2009)

SME Properties	Components
Lack of resources and experience with process design	Start with a less radical approach and consider BPR after the implementation of the system (Ravarin et al., 2008)
Lack of process discipline and informal ways of working	It may be hard to start working according to the formal and standardized ways that the ERP system's needs (Huin 2004; Snider et al., 2009). Some restructuring might be necessary in order to fit the process into the system, although this may also be harmful to the organization's flexibility. Therefore, the system must also configure to suit the organization (Quiscenti et al.,2006)
Lack of resources	A system that blends well, minimizes the need for ongoing support once it has been implemented (Malhotra and Temponi ,2010)

2.10.3 Change movement

Despite choosing the redesign procedure during the ERP implementation, various changes will be applicable. Resistance to change is apparent in most cases of projects, regardless of the project nature. This is even more applicable in ERP projects and their implementation. (See table 2.7). Moreover, there are findings indicating that efforts needed within change management are always highly underrated (Grover et al., 1997).

Additionally, some researchers argue that SMEs do not seem to understand the IP adoption that may need changes in both the organisation and the management structures (Levy and Powel, 2000; Buonanno et al., 2005). On the other hand, SMEs may not want to change their corporate culture and the manner in which they do business to accomplish a more compatible fit with ERP (Dixit and Prakash, 2011; Metaxiotis, 2011).

Change may be easy within smaller companies because there is minimal disadvantage (Argyroulou et al., 2007), additionally contest that. This is because of the low levels of hierarchy, and top management involvement in the implementation procedure. Increased commitment can be understood because taking part adds a clear communication of goals that may lead to the minimization of resistance to change. Therefore, when the CEO and top management works proactively to ensure change, this can be achieved more easily than in larger organisations. This may be the case, regardless of the SMEs inadequate understanding about techniques like BPR (Argyropoulou et al., 2008).

Additionally, Laukkanen et al. (2007) has established that larger organisations may see the changes that resulted after ERP as a riskier factor compared to smaller organisations. Shaul and Tuber (2012) notice that change management must be done by the involvement of top management "instead of depending on the customers or consultant's effort to overcome resistance". They also noted that objections to change have been successfully handled by "providing change management teams and programs which are made up of project management and top management".

The authors state that a project champion representing the executive level is essential. This is because he or she has the ability to straighten out, mediate, override, undertake, appoint open-minded figures and implement essential practises (Shaul and Tauber, 2012). This is in accordance with the findings of Basu et al. (2011) that a project champion should "have the power to set goals and to introduce legitimate changes.

CHAPTER THREE

OVERVIEW OF ENTERPRISE RESOURCE PLANNING (ERP)

3.1 Introduction

ERP systems support organisational operations like human resources, logistics, finance and manufacturing. Various small and medium industries have already been through at least one cycle of ERP software implementation and they find themselves in the post –implementation phase. ERP systems are reliable if the pre-implementation phase aligns the ERP processes and requirements for providing a change in business. Pre-implementation redesigns can be caused by various global reasons. These could include an ERP policy that is efficient and has been recently implemented which is introduced by management. It could also be a new and more efficient management policy that is recommended which must be shown in ERP systems; it could be due to External factors such as technology providers, suppliers and regulatory agencies. ERP may need to improve or refurbish new procedures that is derived by financed authorities to experience money practices that are developing.

The literature concerned with the pre-implementation of ERP mainly focuses on data quality, and ERP systems are referred to as the CSFs of the pre-implementation phase. ERP system quality is known to depend on the data processing, which may be authorized by the system. It is lessened when various functions that are in control of the same objectives of the ERP system are not well-matched. This can occur when data made by function A cannot be used by function B successfully during the pre-implementation improvements which may reduce the ERP and data quality that will in turn lead to difficulty when managing chaotic systems. Consequently, it is required to provide support to stakeholders such as business analysis and developers which may give advice during the process of implementation in evaluating the effect of ERP as well as any changes in pre-implementation. This requirement is partly an answer required by using the contemporary literature on ERP structures modelling and layout.

3.2 Adoption and implementation of ERP system

The beginning of ERP comes after the inspiration originating from different aspects such as various organisational improvement factors like hierarchical recognition, interior authoritative

groups, accessibility of assets and focused scenes. This also incorporates the manner in which workers and associations see the use of an ERP framework (Hong and Kim, 2002). The inspiration as to why the business is actualizing the ERP comes through the desire to upgrade part of or the total undertaking techniques, which might be the progression of data and quality control (Abdelghaffor and Azim, 2010). ERP usage may also help with the solidification and undertaking of capacities or the information between the associations, providers and customers (Sharif et al., 2005).

ERP usage could be facilitated by merging the divided company capacities between the organization's suppliers and shoppers (Sharif et al., 2005). ERPs are often alluded to as a supporting instrument, which might provide as well as facilitate strategies by incorporating fashionable business enterprise methodologies (Razmi et al., 2009). The literature from the US and UK demonstrates the importance of ERP implementation. Additionally, the coordination of varied systems of ERP usage adoption that ought to be attainable in organizations can still assist throughout the incorporation of ERP (Willies Brown, 2002).

This will likewise result from the post execution alterations such as including customization modules that might include the incorporation of purchasers. (Esteves and Paster, 2001; Esteves, 2009). The combination of business forms between the inward association's components and outer elements will influence the cooperation while manufacturing and highlighting units. This may also rely upon elements, which incorporate structures, mission specialization required, generation systems and targets (Hsu and (Hsu and Chen, 2004).

3.3 Adoption of ERP within manufacturing and service industries

ERP structures were formerly used by captcha extensive organisations, which includes manufacture. In addition, more emphasis was placed on the way ERP providers were structured in comparison with the service industries. In current years, there is an increase in ERP structures implementation within the service industries. They have made sure that the organisations in which the established order operates may be influential to the incorporation of information structures (IS). The development of the carriers inside the European Union in 27 countries will increase questions concerning the acceptable expertise.

Most importantly, the innovation is regarded as integral to the attractiveness of superior monetary values. Different establishments have different approaches that they use for operations. In addition, the factors that are in relation to ERP usage and values may vary accordingly within different organisations that is from the carrier industry and production ERP costs and Resource-Based View (RBV) theory. The RBV idea is the dominant theoretical clarification of commercial enterprises, and numerous IS researchers have hired aid with the goal of expanding and deepening the expertise of IT business values. RBV guarantees that the agency can create values through combining heterogeneous motivation which will in turn be economically valued and be imparted across the companies.

In the literature, RBV is used to analyse ways in which IT enterprise values can be explained by IT aid. That said, ERP tools and ERP systems and business values are dependent on the volume to which ERP systems are used within the main activities from the company's values chain. The adoption of values needs abilities to use the ERP system in the implementation phase, and various studies have concluded that ERP systems can cause sustained aggressive gain. When thinking about RBV, the contemporary observation will consider variables that can be perceived as valuable resources to enhance a firm's performance in addition to extracting cost from ERP.

There is a variety of ERP solutions providers in the market. Some are costly with numbers of various modules, while others are affordable and mainly focus on special operations like production planning as well as accounting. In addition, the ERP considers its features and coverage; ERP software is unable to cater for all the requirements and what is expected by the organisation. This is because the organisation operates its business with various strategies and goals. ERP also uses various database, hardware platforms and operations systems; therefore, organisations must perform prior requirements analysis to ensure that selected systems suit the need perfectly. Although the implementation of ERP is not complicated, the literature reviews present 90% of ERP projects that were complicated and also exceeded pre-determined budget limits (Yang & Ozdemir, 2007; Holland, 1999).

3.4 Stages of ERP

ERP usage has value streams such as lifecycle stage and static CSFs. ERP activities for the most part have degrees of implementation. They incorporate appropriation, choice, securing and execution, use and support, development and retirement's that are found in the ERP setting. These are the elements required to ensure that ERP ventures are effective. The literature survey has identified various ERP CSFs, dependent on the audit of the CSFs for effective ERP execution across 10 nations. Ngai et al. (1999) distinguish 18 difficulties and variables prompting underperformance with an excess of 80 sub-factors.

The most symbolic advancement in ERP exploration is to tackle the relationships that CSFs have with other stages. Parr and Shanks (2000) have attempted consolidation of a CSF venture stage model that assimilates the arrangements, tasks and development stages. Even though the pragmatic evaluation of the ERP model is restricted on the grounds that it just has nine CSFs; the possibility that CSFs must connect with the usage stages is an ERP advantage that can be observable. The subject of when and where CSF must be coupled during ERP implementation has to be provided as given by the CSF. Markings et al. (2000) spotlighted the increase during the stages of the ERP lifecycle model. They said some aspects may be executed wrongly within the ERP lifecycle period and some of the on-screen characteristics may also be encompassed within stages. Esteves et al. (2009) gives the suitable relationship between CSFs and the ERP execution stages.

Twenty-three CSFs are identified with five ERP usage levels principally dependent on their relevance, which could allow organizations to oversee and show indispensable issues at some stage in ERP ventures. In addition, none of the previous research has attempted to expand execution appraisal and improvement techniques for ERP usage. Esteves et al.,2009 showed the more precise relationship regarding CSFS with 5 usage stages. In any case he didn't cover general execution estimation and improvement measures. The past system creates KPLs for some CSFs which does not quantify their performance and how to continually adapt to underperformance.

3.5 Assessment and improvement of ERP implementation performance

ERP presentation excludes illustrations; for example, people assigned during the administration of ERP (which includes project managers and consultants) who are usually preoccupied with implementing the projects within the planned time and with the right budget. Individuals who select the ERP frameworks and execute and perform business undertakings, tend to repeat the way that the system can help them to maintain their normal objectives. Various methodology techniques that employ ERP activities are carried out on this examination. As the consequence of the performance and the time included within the stage, the accomplishment of the stage has been sought as the basis to quantify execution at each phase during the ERP execution to guarantee achievement.

By so doing, it makes persistent improvement doable during the phases of ERP usage when inadequacy comes to the fore. This is utilized to evaluate the authoritative lack of consistency within the frameworks of ERP and its live run stage. Weil (1999), has presented performance pointers which make a strong suite of ERP execution targets and furthermore measures the business contribution of ERP after the live run.

When it comes to the accompanying investigation improvement, activity might be unthinkable in the absence of top to bottom implementation evaluation. A top to bottom progressive evaluation is conceivable by dealing with the exhibition of CSFs to screen and control execution of each phase of ERP. Even though this methodology has been recommended by different originator's, limited measures are still lacking. For instance, Bhatti et al., 2000 recommended a path which might be utilized for overseeing CSFs by creating devices to gauge their presentation during the ERP usage. Twelve CSFs are recognized by alluding to four phases of ERP usage and they are additionally estimated by the multi estimation scale. Esteves et al. (2009) assigned a structure that might be utilized to create key performance indicators (KPIs) for ERP CSF and apply it to four CSFs. These include maintainable administration backing, business process reengineering preparation and client inclusion and investment. Creating KPIs for CSFs enables the presentation of CSFs to be correctly dissected and supervised in settings. None of them ever attempted to build up the ERP execution evaluation and improvement approach.

3.5.1 Identification of ERP implementation stages

The five steps of executing ERP models are recognized, and they are extensively described within the literature review. Company's readiness is the most essential subject matter within ERP studies, however no report concerning establishing the readiness for the evaluation of the ERP implementation models is found. The last stage is mostly suggested in ensuring the mechanism is well-prepared, and the system examination and training are successfully accomplished prior to the live run of ERP. In this dimension frameworks execution is assessed by following and getting clients input. Execution must be assessed yearly for ERP running, with the aim of improving the framework and fixing increased issues and changes that extend the advanced with progressive ideas. This stage additionally includes two potential exercises when performing audits. A framework is created that enables different capacities to be collected and in addition, to get best the advantages in which the past ERP is superseded progressively.

Ross and Vitale (2001) state that the degrees of ERP execution can be viewed in five stages:

1. Plan: the company needs to decide on significant structure questions, process change and framework institutionalization

2. Execution: A sustained development or one marked by gradual changes through a series of states

3. Adjustment: On this section the company requirement is to streamline its strategy and information just as to alter to new frameworks and partnerships change.

4. Constant improvement: comparatively, new highlights and new modules in the ERP structures that includes the business strategy to boost business in terms of client satisfaction, quality, speed, flexibility and reduction of cost.

5. Transportation: the company can adjust itself. This investigation is able and mindful of relentless improvement

3.6 Chapter summary

The advantages of ERP implementation have been clearly stated and what is necessary to successfully execute the ERP system. Various ERP systems that are found in the market have been clearly defined, and more importantly the sources of ERP which present the opportunities in the South African SMES. The next challenge will therefore be to establish the parameters discussed within the above literature skills that hold true for the South African SME environment. What is more important now regarding the system is to establish the factors that can prevent diffusion of ERP systems within SMEs sector. The goal of the study includes establishing the problems to be considered during the execution of ERP systems in SMEs.

CHAPTER FOUR

SMALL AND MEDIUM ENTERPRISES IN SOUTH AFRICA

4.1 Introduction

The purpose of this chapter is to provide an in-depth perspective as to how small and Medium Enterprises (SMEs), contribute to GDP and development of monetary improvement of South Africa. This section concentrates on the work of SMEs in South Africa and therefore its accountability towards the advancement of the economy. Additionally, it explains why SMEs are unable to succeed; the basic driver of setbacks is explained throughout the chapter

Map 4.1: Map of South Africa

Source: Digitalmapsstudio.com

4.2 Small and Medium Enterprises' economic role in South Africa

Small and Medium Enterprises (SMEs) are accountable to produce a significant improvement of monetary value within the economy. Their job concerns creating and growing the companies and their contribution is incredibly essential to exports facilitation. In addition, SMES offer basic mass employment.

4.2.1 Contribution of SMEs to the South African Economy

There are 2.8 million various Small and Medium organizations in South Africa. They represent a contribution of fifty-two percent to and 60% of business. Growth Enterprise Market (GEM) computes the contribution of SMEs at 36%. Monetary framework has consistently demonstrated that the developing of most recent organizations drives money growth. It additionally the fundamental patron in expanding the challenge of developing parts, new independent ventures together with the small organizations are basic for money related development and dynamic capacity in numerous regions. Procedure presentation, money related increment and destitution markdown are normally the fundamental political enthusiasm for business enterprise (Willis et al., 2011). Enterprise is hence putting weight inside the economy, explicitly because of advertisers' inventive nature.

4.2.1.1 Gross Domestic Product

Small and Medium Enterprises are seen as the drivers of expansive monetary progression in South Africa and the world at large. South African SME obligation towards GDP is regularly low when comparing to other developed nations, for example, Brazil (59%) and Chile (57%) which includes the nations that are in their development stages, for example, Japan (55%), China (60%) and Germany (87%) Furthermore, the Organization for Economic Cooperation and Development (OECD) (2010) has ensured that the report available in South Africa is disclosed. According to the Organization for Economic Cooperation, Development (OECD), monstrous affiliations are the normal proponent of domestic GDP, explaining the low obligation of SMEs to GDP could be attributed to the low rate of investment to GDP ratio.

Table 4.1 below shows the contribution of small and medium-sized enterprises to GDP in some African countries as well as worldwide countries. By rearranging winning markets and creating fresh markets, SMEs can contribute to the benefits of GDP. It also makes fresh markets improve and progress. SMEs are responsible for change, while SMEs are obliged to improve and benefit GDP

Table 4.1: African and global nations contribution of SMEs to GDP.

Source: Beck Levine, Kunt (2005)

Developing	GDP Contribution	Developed	GDP Contribution
Cameroon	20	Poland	63
South Africa	34	Canada	57
Tanzania	35	USA	60
Ivory Coast	19	Australia	51

4.2.2.2 Contribution SMEs to employment

South Africa measured that small and medium-sized enterprises make up 90% of formal organizations, employ about 60% of the workers, and contribute 34% of GDP in general. SMEs are considered to be more enterprising than giant organizations. Small and medium-sized enterprises in South Africa essentially apply most mechanisms for creating themselves when compared to larger enterprises. Thus, small and medium-sized enterprises have an exceptionally elevated potential for job creation and can assist to reduce the unemployment rate in South Africa. For example, work in the developing countries such as South Africa, Cameroons and the Ivory Coast can be organized around that country's SME division. The World Bank considers the generation of small and medium-sized enterprises as an opportunity to improve and move forward.

4.2.3 Poverty minimization

Poverty diminution is that the biggest challenge experienced on a global scale in each nation. Despite that this is often the fact, poverty in developing nations remains progressively noticeable and still keeps being an essential problem to be dealt with. South Africa perceives this to be a primary improvement objective to reduce poverty. additionally, South African economy perceives that to be a basic to make up the residential personal division as an approach to drive development. The continual reality to the joblessness is that the primary driver of neediness within the operating age. Republic of South Africa has been developed recently, nonetheless still the reality is that the rate of poverty is not declining. The table below demonstrates the amount of poverty in establishing nations versus the poverty rate in developed nations.

Table: 4.2 Poverty minimization

Source: world Bank (2010)

Developing Countries	Poverty rate (%)	Developed Countries	Poverty Rate (%)
Cameroon	48	France	6
South African	57	UK	14
Senegal	54	USA	12
Zambia	86	Australia	8

Developing small and medium-sized enterprises are considered to be a fruitful and essential contribution to the management's plan of needs relief, job creation and financial growth (Rogerson, 2008). The Globe Bank (2010) has a wide-ranging SME strategy based on three main pillars. Initially, SMEs have benefits for the economy, such as skills, growth and profit growth; this is often what the SME brings with it thanks to the enhanced challenge and business. Furthermore, despite this fact, small and medium-sized enterprises are more lucrative than larger organisations

4.2.4 Challenges to be considered by Small and Medium Enterprises in South Africa

❖ Crime and debasement
❖ Acceptable innovation and low generation limit (incorporate access to power)
❖ A absence of the board skills and lacking proficient work
❖ Finance and acquiring credit
❖ Access to market and creating association with clients
❖ Recognition by huge organizations and government administration
❖ Knowledge and backing for the job that they play in financial advancement
❖ Regulatory consistency

4.3 Main elements that affect the Failure of SMEs

4.3.1   Technological Capabilities of SMEs

As per reports along with the assistance from the world Bank (2010), African business visionaries ought to begin putting resources into applicable innovations with the expectation to develop the capability within their SMEs in expansion in order to upgrade the efficiency of manufacturing, which over the long haul will develop the strength. As perceived by Payne and

Kongthon (2006), it's more and more important that specialists facilitate with innovation activities and systems where still in transit to realize practices objectives of crucial business endeavours.

In the event that SMEs cannot perform consequently, they need a lot of opportunities to stay ahead regarding group action in advancement and innovation. Overall, worldwide areas that are advancing spend about 3% of their general GDP on innovative work tasks. Some developing worldwide areas including China, India and Brazil have of late developed their examination and improvement use to the levels of the most developed countries (Morrison, 2006). SMEs face some obstructions that make it difficult for them to upgrade their innovative capacities. It is fundamental therefore that SMEs put resources into innovation as these are basic to everybody and to all organizations. Innovation assumes a significant role in the advancement of organizations.

Venture et al., (2016) recognizes that skills are essential requirement for SMEs growth. Additionally, they draw attention to the absence of essential abilities; there is lack of administrative aptitudes in South African SMEs. There wastefulness inside administration aptitudes among SME proprietors and administrators can be clarified the additionally the absence of instruction and on-going preparation. Administrative abilities are characterized as a set of whole-hearted, social and subjective insights that can be utilized to provide adequacy in expert administration and positions of authority (Boyatzi et al., 2011). Entrepreneur's capacity to adequately discover these skills is fundamental to the achievement and development of all business firms.

Herrington and Wood (2003) state that there is an unmistakable division in the South African background, and preparation which has limited administrative capacities inside the SME sector. Deficient instruction and preparation are viewed as a definitive reason why there are setbacks within SMEs. More significantly, the difficulties are not by any means brought about by insufficient talented work. These issues also incorporate the failure of the SMEs to draw in the gifted talents inside South Africa. The end goal for SMEs is to have create profit as well as to look after development. These organizations will therefore be required to approach the pool of qualified, talented and enthused workers.

4.3.2 Qualities of entrepreneurs

The achievement of small and medium organisations is to create and have a productive business, depending upon the individual traits that the managers display. The seven most noteworthy resourceful components that have been identified pertinent to the achievement of

managers are motivation, knowledge of what you offer, how to manage cost effectively, flexibility, and energy.

4.3.3 Self- Motivation

The most critical quality is self-motivation. To be able to succeed, you should in all likelihood motivate yourself. You are not accountable to some other individual as a business visionary, and that at times it's hard to get moving without anyone to make you. You ought to be committed to your plan and keep pushing ahead paying little heed to whether you are not tolerating snappy check

4.3.4 Knowledge of products

As a business visionary, you need to perceive what you offer, and how it fits well into the business divisions. Despite whether it is a thing or an organization, you need to acknowledge when it's an appropriate chance to get things done. With that said, the entrepreneur should have the knowledge of when they are at their best, broadly engaging or bargaining. Having the alternative to position yourself and after that adjust as required is a noteworthy bit of business organisation.

4.3.5 Motivation

Finally, all the small and medium organisations that have been working for more than five years are being driven by business visionaries who are eager about their things. They feel significantly about their thing, organization, or mission. Eagerness is what will empower you to find motivation when debilitated and it will drive you forward. Business endeavour is thus a central purpose inside the economy, particularly with regard to the business visionaries' creative nature (Fuellhart and Glameier 2003; Maxwell and Stones 2004).

4.4 Globalization

Globalization is accountable for interfacing the world with its extended accessibility that it has acquired. Globalization understands the strain to ensure that SMEs can reduce creation overheads, be continuously effective and end up being logically learned (Organization for Economic Cooperation and Development, 2000). An authoritative quality for globalization is the internal change in the fiscal world that has moved money activities from a national focus, to the world stage. As demonstrated by the report of the Organization for Economic Cooperation and Development, the move is confirmed by its impact on trade streams that combine the imports

and charges. The issues that have not been recorded as the outcomes of globalization have relate to economies of scale and inventive work.

In order for South African SMEs to prosper and progress, the proprietors need to acquire knowledge of the component, accumulate society capacities as well as the effective abilities that can obtain competitive advantage. With the objective for SMEs to manage the broadened test brought about by globalization, SME proprietors ought to demonstrate regular adaptation that manages the future test. In addition, this will help the organisation keep up its sensibility and forcefulness. David et al., (2009), states that despite every division and establishment, the components of competitive advantage is remarkable.
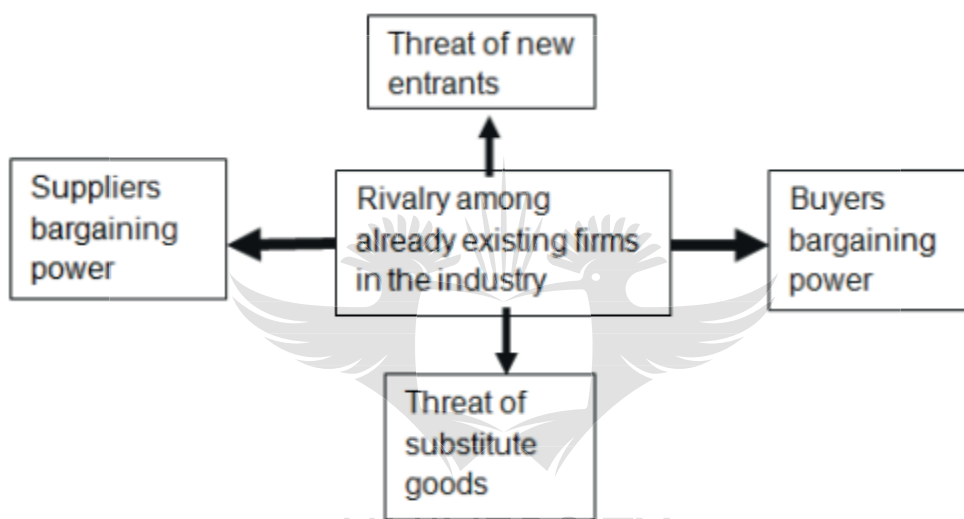
Figure 4.1: Porter's five forces used in globalization

Source: (Hellriel et al., 2008)

The figure above demonstrates the forces that SMEs experience. Dispute among competing organizations is the most dominant of the 5 forces. David (2009) expressed that challenge among competitors can increase when customers are exchanging manufacturers, as they are experiencing issues or challenges, keeping in mind that the expenses are high. Rivalry among competitors produces value lessening, showcasing advancements, predominant buyer contributions and upgrades in administration (Hellriegel, et al., 2008). Competitors regularly utilize these procedures to upgrade their industries' positions. As competition strengthens, industry payments decrease and the undertaking changes to the worst (David, 2009). Enormous organizations cut costs as a determined procedure to defend the business from various organizations.

4.5 Characteristics of entrepreneurs

The growth of small and medium agencies and its action is basically focused about the management of its human capital. Studies completed on the entrepreneurial personality have revealed that almost all entrepreneurs have similar individual attributes. However, most researchers have established that SMEs businesses no longer rely on the talents that the enterpriser have. The five most significant entrepreneurial parts that are diagnosed are innovation, open minded, risk taking potential, ability and determination (Singh Amp & Rahman, 2013). Traits of marketers include specific traits, characteristics, learned characteristics and demand characteristics that facilitate the entrepreneur to realize success.

SME board having significant systems does not guarantee satisfaction; this strategy may be mistaken, wasteful or lost in specific conditions. One of the guideline traits that makes a SME prevail over the competition is their skill. The important impacts of character, human capital and condition on satisfaction should be mediated by methods for systems and approach. Subsequently, the potential contrasts among individual and authoritative level factors are bigger in greater companies and become progressively smaller with SMEs. In addition, an individual degree of analytical character, human capital, objectives, systems and condition of the individual proprietor - can be utilized productively to create achievement in these organizations (Frese, Van Gelderen, and Ombach, 1998). In small and medium organizations, the degree of investigation is of real significance and it should be resolved to be able to know which measures of information from the proprietor/director are helpful as indicators of progress.
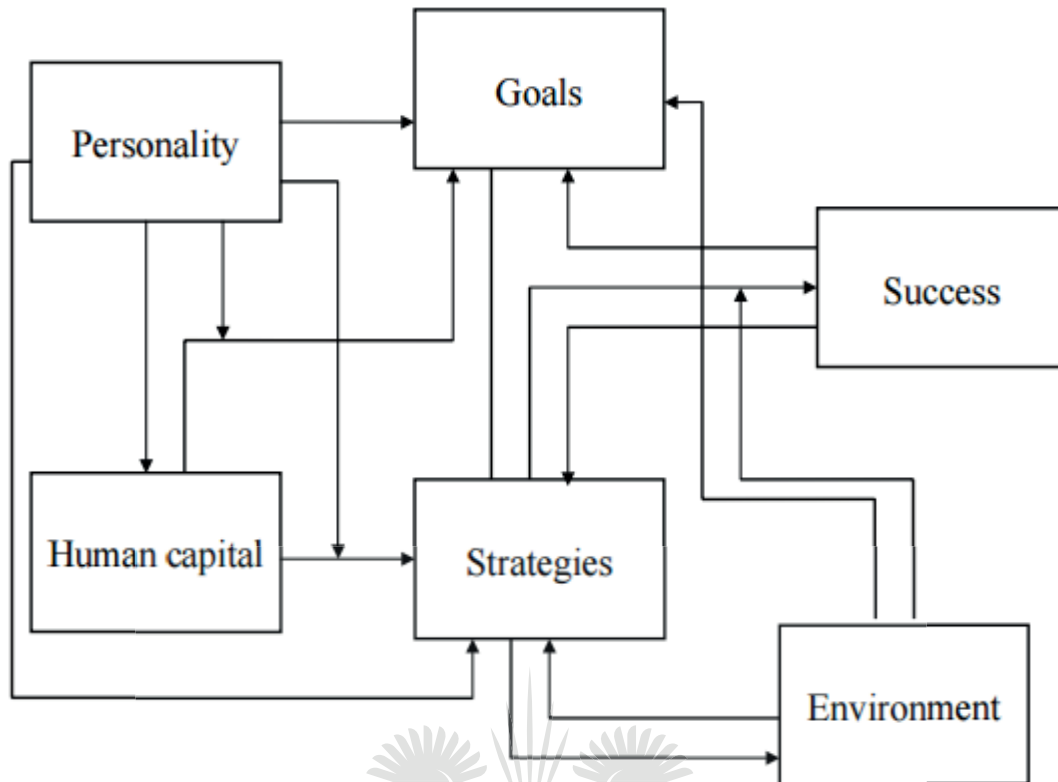
FIGURE 4.2: Giessen-Amsterdam Model of small business owners' success

Source: (Martinelli, 2001)

4.6 Conclusion

This chapter has focused on the definitions of small and medium enterprises (SMEs) within South African companies. The definition of SMEs is taken from the guidelines of the South African Bureau of Standards (SABS). For example, it says all companies with less than 199 employees are referred to as SMEs. The main aspects of SMEs in South African industries were discussed in -depth in this chapter. It is very important for a South African related SME to be innovative and collaborative with other companies. One should consider these features while building the framework for the SMEs sector.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Introduction

The purpose for the chapter is to discuss strategies and methods used to accumulate data and describes how the results from this research will be assessed. The methods used to analyse data for this study are factor analysis and descriptive analysis, meaning it is a quantitative approach to data analysis. The chapter in conclusion outlines the techniques that were executed in the reliability of the findings. The methodology was carefully considered, and details were clearly stated as well as the sequence of activities. In addition, the chapter will also describe the following: reliability of the study, research approach and design, the use of quantitative, research, targeted area for respondents, research population, sample, data collection and instrument.

5.2 Rationale of the study

The objective for this study is to establish the factors affecting the implementation of ERP in the South African Small and Medium organisations. The results gathered from the research will assist in improving the implementation procedures of ERP conducted in SA in Gauteng Province. Moreover, the outcome will provide more understanding of ERP implementation.

5.3 Research approach and design

Polit and Hungler (2013) and Moxham (2012) characterize a quantitative study as a technique exploring the association between variables through experimental methods of thinking. A variable is a component that can be tested or modified (Wong, (2014). This examination used a quantitative method to define and analyse issues that can be experienced in South African small and medium industries when implementing ERP. In addition, the competition was checked by organizations using ERP in Gauteng Province, South Africa. The findings of the research were acquired through questionnaires.

The three type of research structures that might be utilized are descriptive, exploratory and explanatory (Yin, 2013). A descriptive narrative was chosen for this research since it offers a thorough depiction of the highlights, for example, standards, abilities, conduct and data of situations or groups. This technique was chosen to meet the targets of this investigation; for example, to decide the present circumstances of ERP implementation in South African small and medium enterprise.

5.3.1 What is quantitative research?

Quantitative researchers utilize new methodologies and quantitative techniques to look at theoretical hypotheses s (Hoepfl, (1997). Denzin and Lincoln (1998) highlighted the possibility of exploration of the connections between factors. A quantitative research approach permits the scientist look at issues or thoughts that can be explored, with the possibility of delivering studies that can be analysed. Generally, quantitative studies use quantifiable measurements (Glesne and Peshkin, (1992)

Stevens (1946) portrays measurement as an assignment of numbers to things or results in relation to rules. As clarified, one may consider estimation as basically unbiased and factually appropriate. In basic terms, estimation includes Figures, objective or hard information). Quantitative researchers attempt to divide and define phenomena into quantifiable or familiar classifications which could be applied to r broader and comparable situations (Winter, 2000).

To be able to deliver a quantitative report, people must use a standardised method in line with prearranged processes. Moreover, this has to ensure that the quantifying methods clearly stated what it is required to calculate. In the comprehensive sense, planning a test or the legitimacy of an instrument is significant. This appraisal will ensure replicability of the results.

As described by Crocker and Algina (1986), the benefits and disadvantages of the quantitative method are as follows. The advantages of quantitative research are

that bigger samples often make the quantitative study findings generalizable. Numerical approaches imply that the research is often well thought out, coherent and suitable where there is a need for methodical comparisons. The drawbacks of quantitative research are that it does not constantly shed light on the complete complexity of human encounters or views, it may reveal what and to what extent, but it cannot constantly investigate why and how.

5.3.2 Exploratory descriptive design

This research analysed the factors influencing small and medium-sized enterprises resource planning in South Africa. It also studied the difficulties of daily accounting for small and medium-sized enterprises in SMEs. This is achieved in order to have in-depth understanding and enable competitive benefits in organizations.

5.4 Research site

This investigation was conducted in small medium organisations around Johannesburg Gauteng province South Africa. It focused on experts working in IT departments in various establishments. These Included implementation teams, project champions, Vendors support/ consultants, representatives and different experts. The location was chosen because the specialist knows the area and most importantly, the area has a large number of companies.

Map 5.1: Gauteng Map, South Africa
Source: Digitalmapsstudio.com

The Gauteng Province of SA was picked for this examination, as it is the nation's business capital; moreover, because it has more diversity. **5.5 RESEARCH SETTING**

Information was assembled from the small medium organizations in Johannesburg Gauteng Province in South Africa.

5.5 Targeted area and respondents

The production planning industry is an industry that entails different processes combined to make a product. Production planning can be used in numerous industries such as agriculture, steel, beverages and food, and so forth. The study was conducted in Gauteng, South Africa; the targeted population was planning specialists that consist of operation managers, employees and other specialists

who were involved in production planning. Questionnaires were emailed to the head offices and from there distributed to the sites.

5.6 Sample

Mugo (2002) defines sampling as a strategy for selecting a sample from a population to establish factors that are being examined. Sampling enables the scientist to understand segments of the population and to have a thorough knowledge of what has to be expected by the members in the investigation and the entire population. Landreneau (2016) highlights that a sample can be picked either through a probability or non-probability research strategy. At the point when probability sample is utilized, every aspect of the population stands an equivalent probability of the inclusion in the study.

Liu (1997) stated that purposive sampling is preferred because it provides the researcher an opportunity to exercise her / his judgement and knowledge when choosing   participants. Small and medium enterprise employees with in-depth knowledge of enterprise resource planning were selected to participate in the study. Such a technique of sampling was also used by (Morgan, 2014) when investigating the link between manufacturing practices and a firm's performance. However, where there are no indications of differences or irregular structures in the population, then random sampling method is more suitable. The researcher studied the nature and features of the population thoroughly to achieve a true indication of the population that was being investigated and selected a random sampling approach with the aim of examining employees in a manufacturing environment. Employees from numerous service providers and manufacturing corporations were picked randomly. The investigator distributed the questionnaires to the professionals from various businesses

5.7 Data collection

The four techniques principally used to collect primary data are: schedules, questionnaires, interviews and observations. Kothari (2004) and Seaman (1991) define data collection as the technique used to get data. This analysis has used a structured questionnaire   as the technique most acceptable to gather data. A

questionnaire was selected for this research using closed ended questions which allows the respondents opportunity to select answers when completing the questionnaires. The research chose to use closed-ended questionnaire because it was easier to understand, and it would also be easier to analyse the data.

The questionnaire consisted of six sections:

❖ Section A: focused on demographic information, for example, gender, age, education or size of company, amongst others.

❖ Section B: To establish the performance of the ERP system from a technical design perspective

❖ Section C: To establish the benefits that can be achieved when implementing enterprise resource planning in South African SMEs

❖ Section D: To understand the motivation for implementing enterprise resource planning in South African SMEs

❖ Section E: To establish factors to be considered when implementing Enterprise Resource Planning (ERP) in SMEs.

❖ Section F: To establish barriers/ challenges to ERP implementation in South African SMES

For this analysis, one hundred and ten schedules were distributed and a hundred were received back representing ninety-one per cent response rate. These formed the inspiration for this analysis as shown within the Table 5.1 below. This response rate was thought of as satisfactory for analysis supported the study by Moser and Kalton (1971). In this study, the United Nations agency indicate that the survey outcome would be biased if the response rate is less than thirty to forty per cent.

Table 5.1: Questionnaire survey

Survey Responses	Respondents
Questionnaire which were distributed	110
Questionnaire which were obtained back	90
Useable questionnaire	90
Useable response rate (%)	91

Prior to the analysis, the data were checked for reliability. Frequency analyses of the raw data was provided utilizing the Statistical Package for the Social Sciences (SPSS).

5.8 Period of data collection

The data was gathered from July to January 2019.

5.9 Mean item score (MIS)

The assessment used a five-point Likert scale to collect information from participants on implementing enterprise resource planning in tiny and medium-sized South African enterprises. For this research, the scales used were:

- ❖ Not Important (NI)
- ❖ Slightly Important (SI)
- ❖ Moderately Important (MI)
- ❖ Important (I)

Another scale used was as follows:

- ❖ Strongly disagree (SD)
- ❖ Disagree (D)
- ❖ Neutral (N)
- ❖ Agree (A)
- ❖ Strongly agree (SA)

5.10 Development of the questionnaire

This questionnaire was mostly derived from the literature review. This questionnaire was checked and approved by the supervisor from the University of Johannesburg prior to its distribution. The questionnaires were typed in easy to read English format (See Appendix 2: Questionnaire).

5.11 Delimitations of the study

The study was restricted to data gathering techniques that were reliable and valid, the research was that the sample of respondents was obtained from small and medium enterprises that had applied ERP.

5.12 CONCLUSION

This chapter mentioned, the methodology used for the analysis, like the information assortment, the analysis approach and style, the sample, population, the form and therefore the borderline of the study. The next chapter presents the data analysis.

PRESENTATION OF FINDINGS AND ANALYSIS

6.1 Introduction

This chapter starts by providing the end result received from the questionnaires sent to gather information. The questionnaires were aimed at small and medium businesses within Gauteng, Republic of South Africa. The examination of this data and translations of its outcomes were procured from the organized survey filled in as the essential part of quantitative gathering of data. The questionnaire consisted of three sections, with each section having multiple questions, however not all questions were answered, and other respondents were not consistent. The investigation was aimed at 100 completed questionnaires out of 120 that was dispensed. The following methods were used to analyse data for exploratory factor analysis namely: the extraction method, which is principal axis factoring and the rotation method that includes the first order varimax rotation as well as second order which is the direct oblimin rotation.

6.2 Section A: Biographical data analysis

This section represents the background data of respondents regarding their demographics such as: gender, ages, and level of education. The graphics below can elaborate exactly what's analysed.

6.2.1 Respondents demographic per gender group

The distribution of the sample as per gender shows that 47% of the respondents are male and 53% are female. This is shown in Figure 6.1
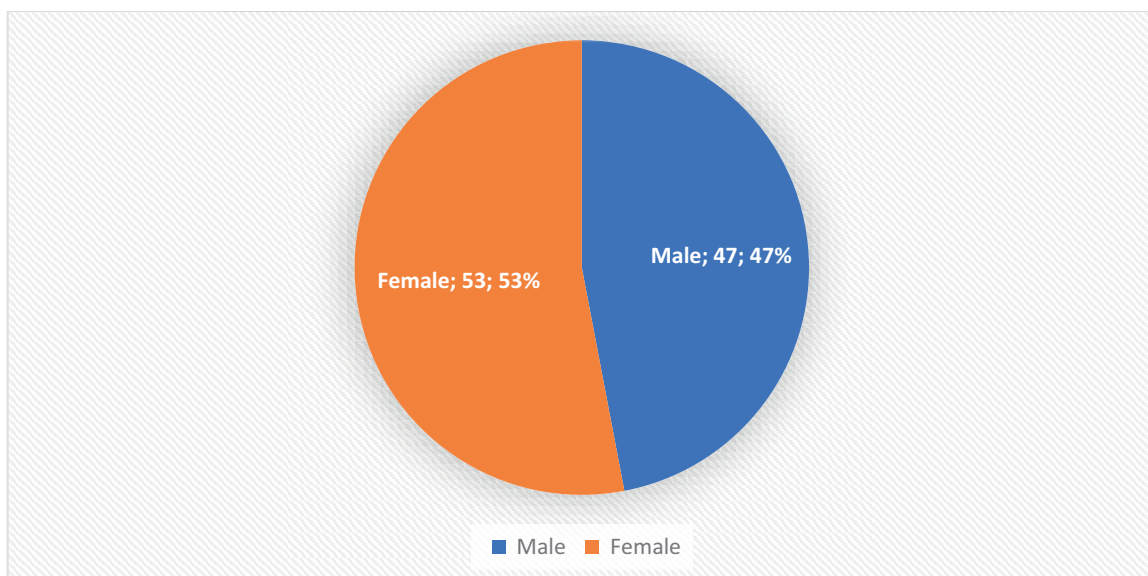
6.2.2 Respondents demographic per ethnicity

The sample according to ethnicity shows that 88 percent of the respondents were from the black population, 10 percent were from white population and 2 percent were from the coloured population. (Figure 6.2)

White; 10; 10%   Coloured; 2; 2%

Black; 88; 88%

■ Black ■ White ■ Coloured
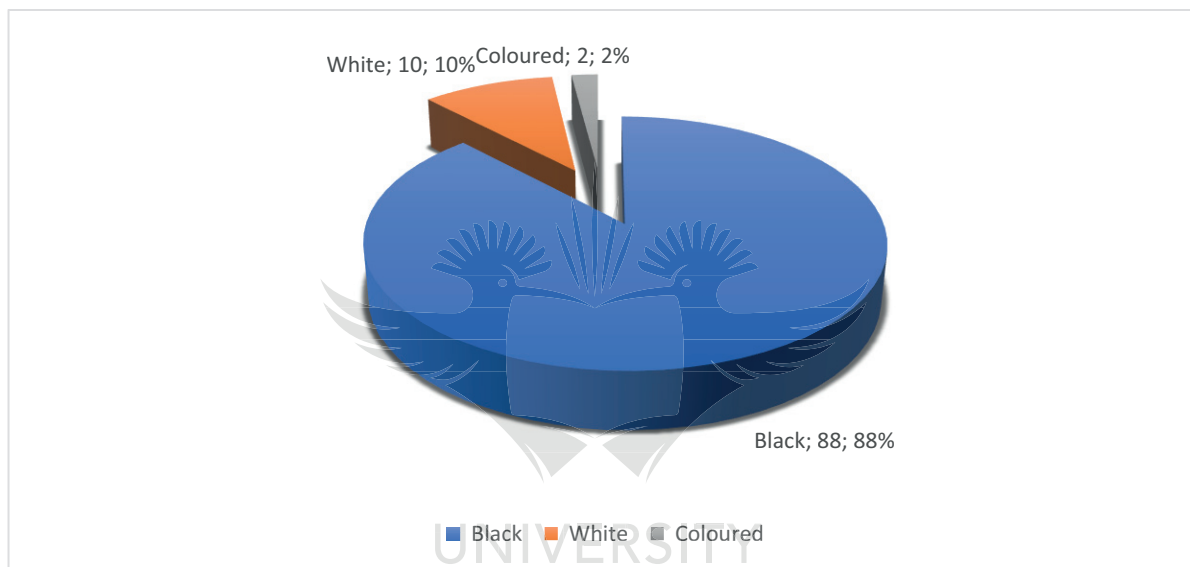
FIGURE 6.2: Respondents demographic per Ethnicity

6.2.3 Respondents demographic per age group

The sample according to age groups is shown in Figure 6.3. It revealed that 66 percent of respondents were between age groups   20-29, 20 percent between 30-39, 10 percent were between 40-49, 4 percent were between 50-59.
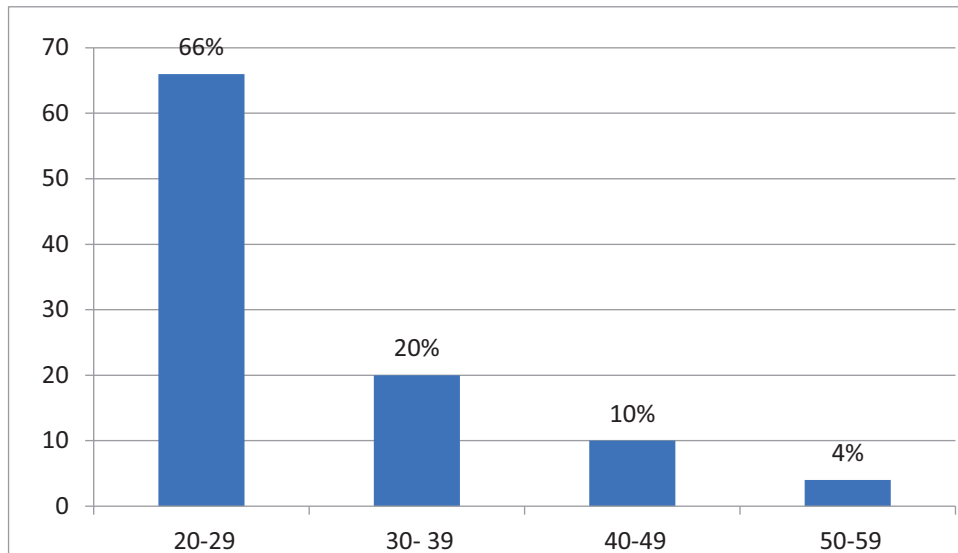
FIGURE 6.3 Respondents demographic per age group distribution sample

6.2.4 Respondents demographic per education level

The sample per educational qualification is shown in Figure 6.4. This illustrates that grade 12 equates to 11%, post matric, diploma or certificates 21%, baccalaureate degree 29%, post graduate degree 39%.
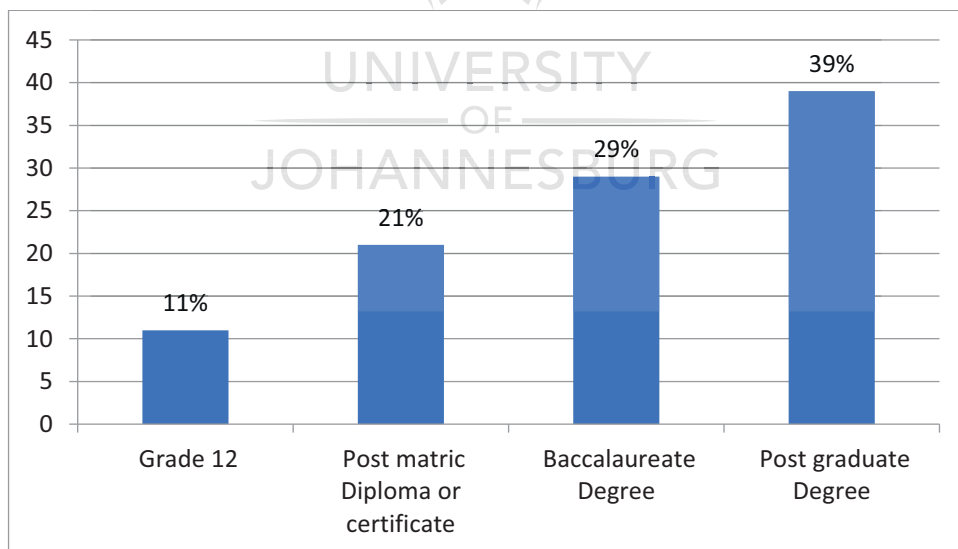
FIGURE 6.4: Respondents demographic per educational distribution sample

6.2.5 Respondents demographic per organisation type

The sample distribution according to type of organisation in figure 6.5 below shows that those that work in food supplier were 21%, non-government 19%, government organisations 12%, regular government 9%, association 22%, consultant 11% and other is roughly 6%.
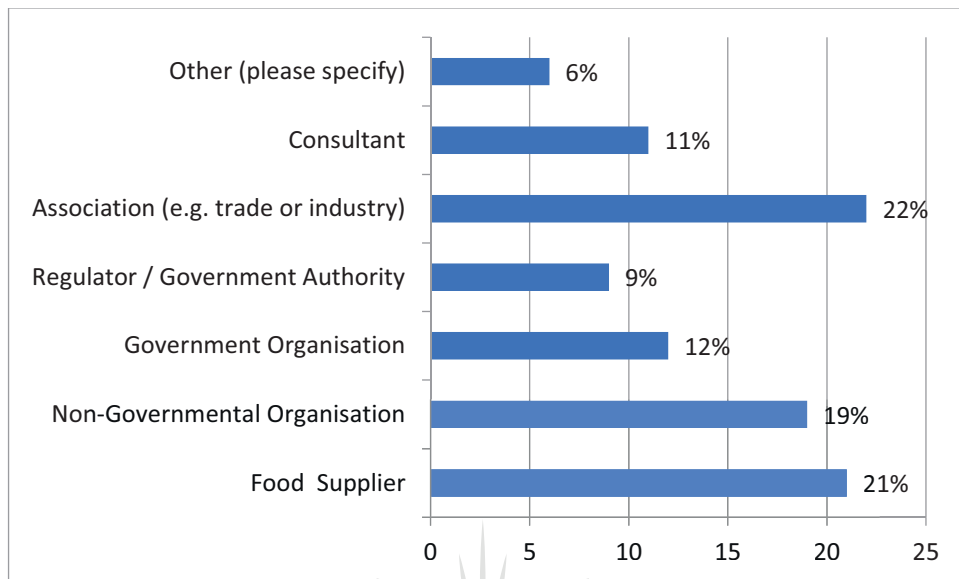
FIGURE 6.5: Respondents demographic per sample according to organisation type

6.2.6 Respondents demographic per years of experience

The sample of small-medium enterprises experience are as follows in figure 6.6. The results show that less than 2 years is 48%, 5-10 years is 25%, 10-15 years is 13%, 15-20 years is 8% and lastly more than 20 years is 6%.
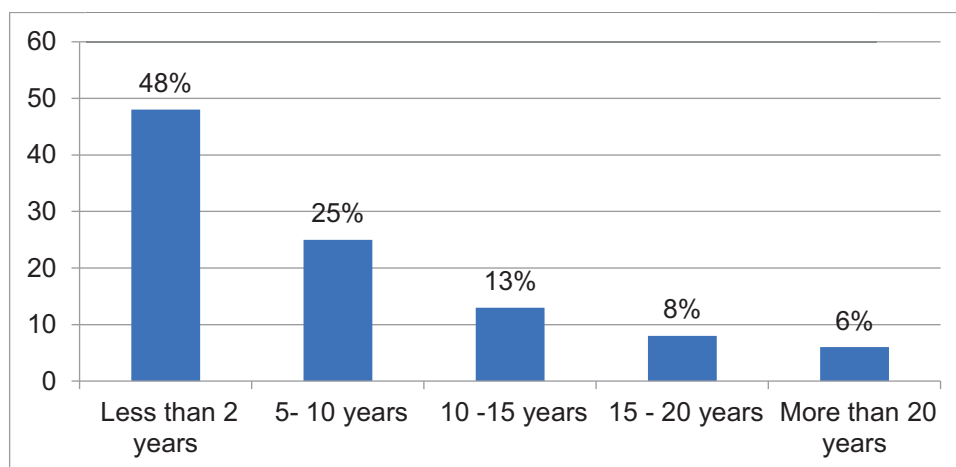
FIGURE 6.6: Respondents demographic per sample according to years of experience

6.3 Section B: Enterprise Resource Planning System performance

In this section, the results from section B of the questionnaire are being provided regarding SME organisations in South Africa. Section B is also concerned with offering discussions related to organization system performance (ERPSP). The suggest item scores (MIS) of the questions, skewness as well as the exploratory factor evaluation (EFA) of the effects are represented. The descriptive results show the ranking of all the elements from the best to the lowest within the table. In addition, it displays the character suggested and standard deviation of the factors. Exploratory analysis (EFA) is commonly used early during studies in order to accumulate statistics and the approximate interrelationships amongst a set of variables (Pallant, 2007). The EFA is undertaken using model 21.0 of the SPSS software program. The necessary assessments were carried out to decide the adequacy of the sample credibility for evaluation to proceed.

As suggested by Pallant (2007), to decide the factorability of the correlation matrix, the correlation matrix ought to show correlations of r = 0.3 or greater; Bartlett's test of sphericity must be statistically large at p < 0.05, and the Kaiser-Meyer-Olkin (KMO) degree of sampling adequacy must be 0.6 or above. To verify the reliability of the studies tool, the Cronbach's alpha values above 0.7 are taken into consideration however; values above 0.8 are most preferable (Pallant, 2007). The advocated values for the inter-item correlations have to be between 0.2 – 0.4(Briggs & Cheek, 1986) in instances in which the Cronbach's alpha values fall below 0.7. The afore-stated values are adopted on the research observation.

The information was subjected to a Principal Component Analysis (PCA) with varimax rotation. To decide on the number of factors to extract, the use of Kaiser's criterion, the whole range of components that have an eigenvalue of 1 or more are selected and followed. The eigenvalue is defined as a mathematical property of a matrix deployed both as a criterion of establishing the variety of factors to extract and as a degree of variance accounted for by way of a given measurement (Dainty et al., 2000; Ahadzie et al., 2008). Also, the graphical scree check is used to exclude elements, with the scree plot indicating the cut-off factor at which the eigenvalues level off (Dainty et al., 2003).

6.3.1 Results from frequencies & descriptive analysis

Table 6.1. Enterprise resource planning system performance

Enterprise Resource Planning (ERP) systems performance	Mean ($\bar{x}$)	Std.Deviation (σX)	Rank (R)
Includes the necessary requirements	3.89	0.790	1
Meets my requirements	3.86	0.779	2
Includes the necessary features	3.79	0.913	3
Easily adapt to one's personal approach	3.73	0.839	4
Is up and running according to its requirements and necessity	3.63	0.861	5

Table 6.1 indicates the respondents ranking of Enterprise resource planning performance questions that can help enhance the ERP overall performance from a technical perspective. It shows that 'easy to implement' was ranked first with a mean of 3.95 and standard deviation (SD) of 0.833; 'includes the necessary requirements 'was ranked second with the mean score of 3.89 and the standard deviation (SD) of 0.790. in addition, 'meets my requirements was ranked third with the mean of 3.86 and the standard deviation (SD) of 0.779 'includes the necessary features was ranked forth with the mean of 3.79 and the standard deviation (SD) of 0.913 'easily adapt to one's personal approach fifth with the mean of 3.73 and the standard deviation (SD) of 0.839. Moreover 'Is easy to implement' was ranked sixth with mean of 3.68 and standard deviation (SD) of 0.973 and last but not least 'Is up and running according to its requirements and necessity' was ranked seventh with the mean of 3.63 and standard deviation (SD) of 0.861.

6.3.2 Results from exploratory factor analysis

Before performing the Principal Component Analysis (PCA), the suitability of information for factor analysis was assessed. The correlation matrix gives the correlation between each item, and its value should have a coefficient of above 0.3 as presented in Table 6.2. As shown in Table 6.3, the KMO measure of sampling adequacy achieved a value of 0.687, exceeding the recommended minimum value of 0.6 and the Bartlett's test of sphericity should be less than 0.05 and in this case is 0 which is an acceptable value.

Tables 6.2 and table 6.3 present the results from enterprise resource planning performance out of the seven (7) variables listed. Furthermore, the following two (2) were omitted: is easy to use (B.2), easy to implement was omitted because they exceeded 1, and communality is not supposed to exceed 1. (B.1) was also omitted because it has an MSA value of 0.247 and MSA values should be 0.6. A total of (5) Variables were identified as potential attributes to measure the performance of the ERP system from a technical design perspective as shown in Table 6.4

the total variance of these factors was as follows: Factor 1 (56.374 per cent) and Factor 2 (20.705 per cent). These two factors explain a cumulative of 77.079 before rotation and 64.142 after rotation.

Table 6.2: Factor Analysis on Correlation Matrix

Factor Analysis on Correlation Matrix		B3	B4	B5	B6	B7
Correlation	B3	**1.000**	0.451	0.455	0.282	0.223
	B4	0.451	**1.000**	0.626	0.458	0.296
	B5	0.455	0.626	**1.000**	0.479	0.440
	B6	0.282	0.458	0.479	**1.000**	0.783
	B7	0.223	0.296	0.440	0.783	**1.000**

Table 6.3 KMO and Bartlett's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.\		0.687
Bartlett's Test of Sphericity	Approx. Chi-Square	203.875
	Df	10
	Sig.	0.000

Rotated factor matrix

The rotated factor matrix shows us which items are grouped in each factor and each item will be given a loading on an appropriate factor. For example, B7 and B6 are in grouped in factor 1 with the loading values of 0.914 and 0.789. For factor 2, B4, B5 and B3 are grouped together with the loading of 0.779,0.724 and 0.556

Table 6.4: Rotated Factor Matrix

	Factor	
	1	2
B7	**0,914**	
B6	**0,789**	0,347
B4		**0,779**
B5	0,319	**0,724**

B3		0,556
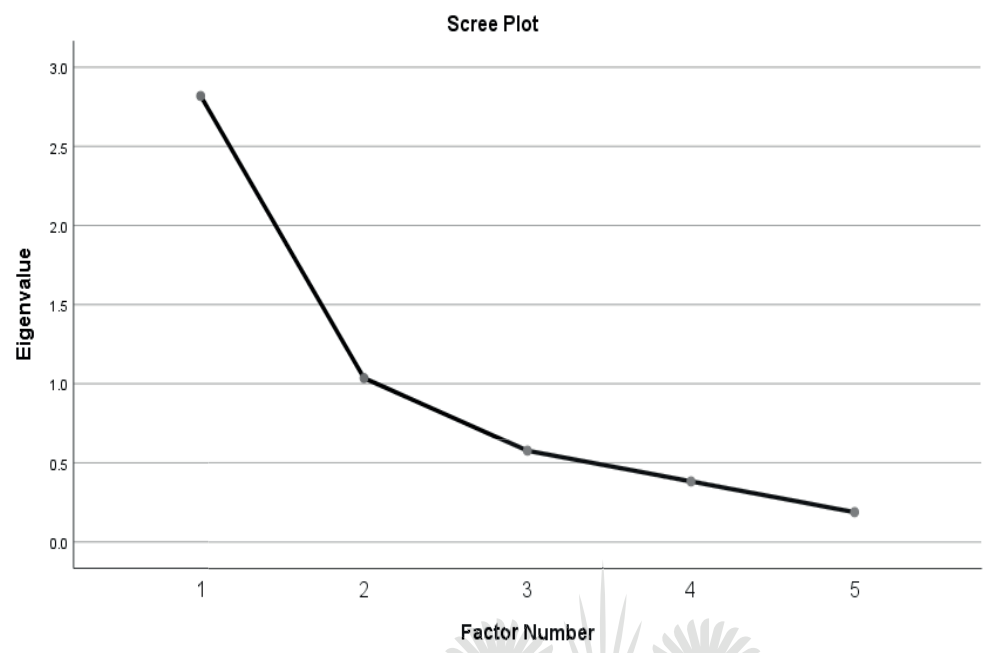
Figure 6.7 Scree plot for factor one

Table 6.5: total variance

		Total Variance Explained							
		Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.819	56.374	56.374	2.497	49.936	49.936	1.615	32.306	32.306
2	1.035	20.705	77.079	0.710	14.206	64.142	1.592	31.837	64.142
3	0.575	11.510	88.589						
4	0.382	7.643	96.232						
5	0.188	3.768	100.000						

Total variance table

The total variance table tells us about how many themes or factors we are going to extract; we first look at the initial eigenvalues above one. When looking at this table we have two eigenvalues above one meaning we going to have two factors. These two factors explain a cumulative variance of 77.079 per cent before rotation and 64.142 per cent after rotation.

Based on the study of the fundamental relations between the variables in each factor, the following analysis was made. Factor 1: ERP adaptability to usage. Factor 2: measurement of system performance. The names that were given to these factors derived from an in-depth analysis of the variables in each factor. Below is the explanation of the two factors and a comprehensive description of Table 6.5.

6.3.2.1 Factor 1: ERP effective usage and adaptability

As presented in Table 6.5, the present situation of enterprise resource planning   within the small and medium enterprise for Factor 1: was provided 'to ensure effective use of ERP, is up-and running according to its requirements and necessity' (91.4 per cent), 'easily adapt to one's personal approach' (80 percent). The cluster was 56.4 per cent of the variance.

6.3.2.2 Factor 2:   Evaluation of system performance

As presented in Table 6.5, the present situation of enterprise resource planning   within the small and medium enterprise for Factor 2: was provided to evaluate the benefits of implementing, 'includes the necessary features' (78 percent), 'does what it should' (72 percent), 'meets my requirement'. The cluster was 21 percent of the variance

6.4 Section C: Enterprise resource planning (ERP) benefits

This section shows the results of section C of the questionnaire with regard to enterprise resource planning benefits in South African SMEs. The mean item score (MIS) of the questions, skewness and likewise the exploratory factor analysis (EFA) of the results are presented. The descriptive outcome reveals the ranking of all the factors from the highest to the lowest. The table also shows the means and standard deviations of the factors. Exploratory factor analysis (EFA) is one of the two approaches to factor analysis. It is regularly set in the beginning times of research in order to accumulate data about the interrelationships between an arrangement of factors (Pallant, 2007). The EFA utilized

adaptation 21.0 of the SPSS programming. The tests were done to decide the effectiveness of the measurement instruments used.

The mean item score (MIS), skewness and exploratory factor analysis (EFA) of the findings are presented. We also take a look at the descriptive results which were ranked from the highest to the lowest and also the means and standard deviations thereof. Exploratory factor analysis (EFA) is a commonly used statistical technique (Jason *et al.*, 2008) and is usually used in the initial phases of the study with the aim of collecting information about the interrelations among a set of variables (Pallant, 2007).

6.4.1: Enterprise resource planning (ERP) benefits

Table 6.6: Benefits that need to be considered when implementing enterprise resource planning (ERP)

Enterprise Resource Planning (ERP) benefits	Mean ($\bar{x}$)	Std.Deviation (σX)	Rank (R)
Enables better monitoring when coming to payments	4.00	0.804	1
Enables more accurate customer invoices	3.93	0.820	2
Increases the focus on customer value added activities	3.88	0.844	3
Enables better monitoring of inventory levels	3.81	0.813	4
Enables better resource management	3.78	0.811	5
Increases the flexibility of the invoicing possibilities	3.73	0.874	6
Monitors all tasks in the organisation	3.72	1.006	7
Improves the management of cost centres	3.69	1.012	8
Helps to improve customer service	3.65	1.048	9
Enables more accurate calculation of the selling price	3.63	1.098	10
Offers increased productivity	3.62	1.062	11
Implementation leads to automation of cost control operations	3.62	1.023	12
Offers increased accuracy of sales transaction data	3.54	0.578	13
Leads to the improvement of cash management	3.46	1.009	14

Table 6.6 shows respondents' ranking of enterprise resource planning benefits. It shows that 'enables better monitoring when coming to payments' was ranked first with a mean of 4.00 and standard deviation (SD) of 0.804, 'enables more accurate customer invoices' was ranked second with a mean of 3.93 and standard deviation of 0.820. In addition, thirdly ranked was

'increases the focus on customer value added activities' with a mean of 3.88 and SD of 0.844. The fourth item was 'enables better monitoring of inventory levels' with a mean of 3.81 and SD of 0.813, while the fifth item was 'enables better resource management' with a mean of 3.78 and SD of 0.811. The sixth item was 'increases the flexibility of the invoicing possibilities' with a mean of 3.73 and standard deviation of 0.874, the seventh item was 'monitors all tasks in the organisation' with a mean of 3.72 and SD of 1.006.

Furthermore, in eighth provided was' improves the management of cost centres 'with a mean of 3.69 and SD of 1,048. The ninth item was 'helps to improve customer service' with a mean of 3.65 and SD of 1.048, the tenth was 'enables more accurate calculation of the selling price' with a mean of 3.63 and SD of 1.062 the eleventh 'offers increased productivity' with a mean of 3.62 and SD of 1.062. Moreover, twelfth we have 'implementation leads to automation of cost control operations' with mean of 3.62 and SD of 1.023. This shows that when coming to the statements 'offers increased productivity' and 'implementation leads to automation of cost control operations', respondents felt that their contribution is the same because they have the same mean of 3.62. Thirteenth was 'offers increased accuracy of sales transaction data' with a mean of 3.54 and SD of 0.578. And lastly the fourteen item was' leads to the improvement of cash management' with a mean of 3.46 and SD of 1.009.

6.4.2 Results from exploratory factor analysis

The results from Exploratory Factor Analysis regarding benefits that can be achieved when implementing ERP in small and medium enterprises' current situation are shown in Tables 6.7-6.12 and Figure 6.8.

Before performing the principal component analysis (PCA), the suitability of information for factor analysis was assessed. The correlation matrix gives the correlation between each item and its value should have a coefficient value of above 0.3 as presented in Table 6.7 As shown in Table 6.8, the KMO measure of sampling adequacy achieved a value of 0,803 thus exceeding the recommended minimum value of 0.6 and the Bartlett's test of sphericity should be less than 0.05 and in this case is 0,0 which is the acceptable value. Tables 6.6 to 6.10 and Figure 6.8 present the results from enterprise resource planning benefits which has eleven (11) variables. Out of these eleven variables listed none of them have been omitted, meaning that all variables measure enterprise resource planning benefits. Accordingly, these variables were identified as potential attributes to measure the benefits of ERP system from a technical design perspective. As shown in Table 6.6, the total variance of these factors was as follows: Factor 1 (41.506 per cent) and Factor 2 (13.952

per cent). These two factors explain a cumulative of 74.794 per cent before rotation and 65.395 per cent after rotation.

Table 6.7: Correlation matrix of benefits that can achieved when implementing ERP in small and medium enterprises

Correlation Matrix		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14
Correlation	C1	**1.000**	0.409	0.382	0.405	0.411	0.128	0.170	0.187	0.280	0.510	0.164	0.134	0.315	0.387
	C2	0.409	**1.000**	0.472	0.229	0.495	0.224	0.289	0.162	0.295	0.339	0.312	0.286	0.465	0.508
	C3	0.382	0.472	**1.000**	0.510	0.532	0.480	0.290	0.157	0.218	0.283	0.146	0.202	0.263	0.389
	C4	0.405	0.229	0.510	**1.000**	0.449	0.304	0.095	-0.007	0.108	0.189	0.094	0.120	0.129	0.241
	C5	0.411	0.495	0.532	0.449	**1.000**	0.627	0.526	0.484	0.553	0.440	0.186	0.216	0.356	0.317
	C6	0.128	0.224	0.480	0.304	0.627	**1.000**	0.547	0.477	0.400	0.241	0.192	0.311	0.286	0.229
	C7	0.170	0.289	0.290	0.095	0.526	0.547	**1.000**	0.674	0.533	0.398	0.478	0.535	0.521	0.341
	C8	0.187	0.162	0.157	-0.007	0.484	0.477	0.674	**1.000**	0.496	0.483	0.345	0.386	0.324	0.174
	C9	0.280	0.295	0.218	0.108	0.553	0.400	0.533	0.496	**1.000**	0.683	0.404	0.257	0.412	0.282
	C10	0.510	0.339	0.283	0.189	0.440	0.241	0.398	0.483	0.683	**1.000**	0.299	0.322	0.481	0.420
	C11	0.164	0.312	0.146	0.094	0.186	0.192	0.478	0.345	0.404	0.299	**1.000**	0.694	0.623	0.477
	C12	0.134	0.286	0.202	0.120	0.216	0.311	0.535	0.386	0.257	0.322	0.694	**1.000**	0.804	0.732
	C13	0.315	0.465	0.263	0.129	0.356	0.286	0.521	0.324	0.412	0.481	0.623	0.804	**1.000**	0.766
	C14	0.387	0.508	0.389	0.241	0.317	0.229	0.341	0.174	0.282	0.420	0.477	0.732	0.766	**1.000**

Table 6.8 KMO and Bartlett's Test on Enterprise Resource Planning Factors

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.803
Bartlett's Test of Sphericity	Approx. Chi-Square	842.719
	Df	91
	Sig.	0.000

Rotated factor matrix

The rotated issue matrix shows that items are sorted into each factor and every item is going to be given a loading on an acceptable factor. In section C we have four factors. Factor one contains C12, C13, C14, C11 with the loading values of 0.925,0.828,0.767 and0.652. The second factor contains C7, C8, C6 with the loading values of 0.723,0.721 and 0.682. The third factor contains C3, C4, C5 and C2 with the loading values of 0.748, 0.639, 0.610 and 0.471. The fourth factor contains C10, C9 and C1 with the loading values of 0.782, 0.562 and 0.497 respectively

Table 6.9: Rotated factor matrix

Rotated Factor Matrix[a]				
	Factor			
	1	2	3	4
C12	**0,925**	0,264		
C13	**0,828**			0,258
C14	**0,767**		0,370	
C11	**0,652**	0,255		
C7	0,388	**0,732**		
C8		**0,721**		0,276
C6		**0,682**	0,427	
C3			**0,748**	
C4			**0,639**	
C5		0,560	**0,610**	0,274
C2	0,334		**0,471**	0,265
C10		0,280		**0,782**
C9		0,525		**0,562**
C1			0,482	**0,497**
Extraction Method: Principal Axis Factoring.				
Rotation Method: Varimax with Kaiser Normalization.[a]				
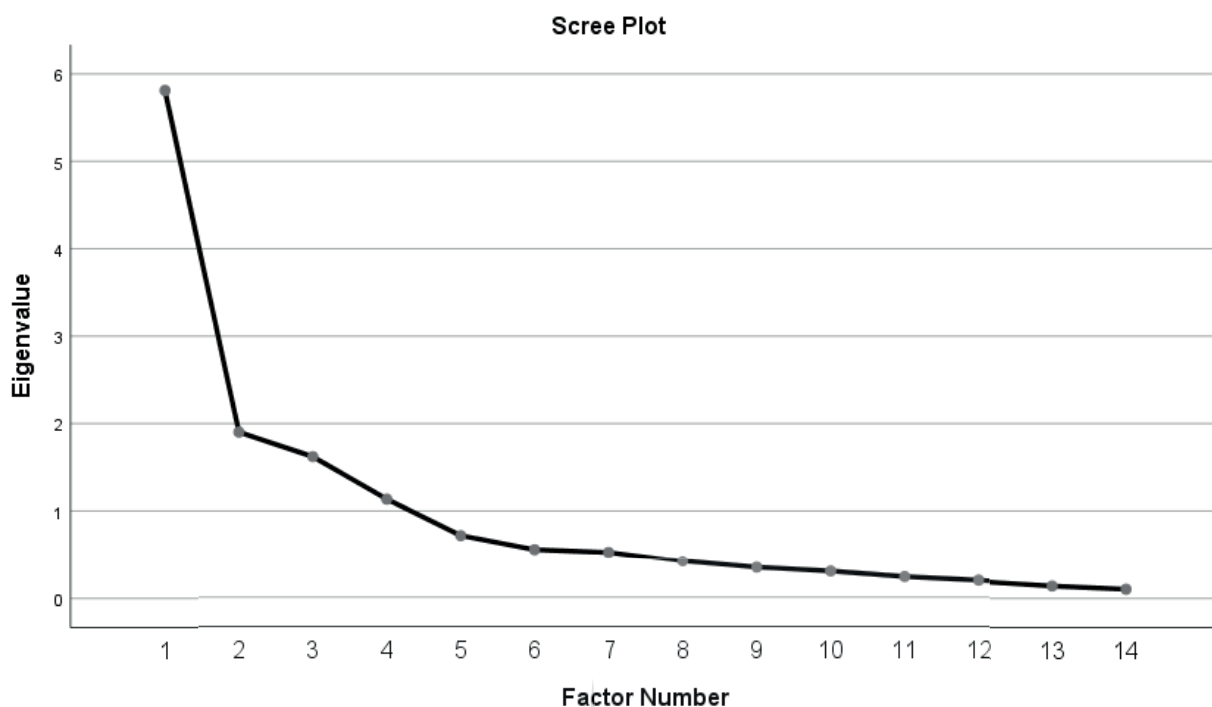
Figure 6.8 Scree plot for factor one

Table 6.10: Total variance explained

	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**5.811**	41.506	41.506	5.502	39.301	39.301	2.995	21.396	21.396
2	**1.903**	13.592	55.098	1.584	11.311	50.612	2.403	17.166	38.563
3	**1.622**	11.582	66.680	1.255	8.963	59.575	2.191	15.653	54.216
4	**1.136**	8.114	**74.794**	0.815	5.820	65.395	1.565	11.179	**65.395**
5	0.718	5.127	79.921						
6	0.556	3.970	83.891						
7	0.524	3.746	87.637						
8	0.416	2.973	90.610						
9	0.343	2.447	93.058						
10	0.298	2.125	95.183						

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11	0.234	1.674	96.857							
12	0.194	1.382	98.239							
13	0.142	1.012	99.251							
14	0.105	0.749	100.000							
Extraction Method: Principal Axis Factoring.										

Total variance

The total variance table for section C shows that we have four initial eigenvalues with values above one. This basically tells us that we are going to have four factors. The eigenvalue was set at a conventional high value of 1.0. Table 6.10 contains four factors with eigenvalues exceeding 1.0: Factor 1 (41.506 per cent), Factor 2 (13.592 per cent) Factor 3 (11.582 per cent) and Factor 4 (8.114 per cent). These four factors explain a cumulative variance of 74.794 per cent before rotation and 65.395 per cent after rotation.
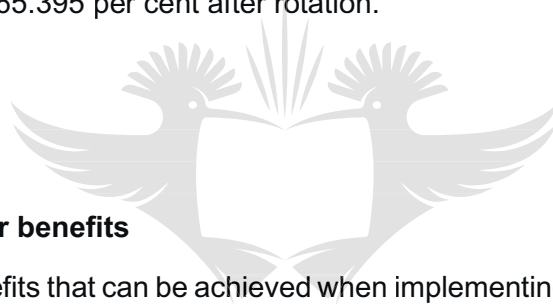
6.4.3 Factor 1 Customer benefits

Table 6.11 presents benefits that can be achieved when implementing Enterprise Resource Planning in South African Small Medium Enterprises. The following are the items which are load in Factor 1 together with their percentage: increases the focus on customer value added activities (93%), enables better monitoring when coming to payments (83%), enables more accurate customer invoices (77%), helps to improve customer service (65%) ensure effective use of ERP, Is up-and running according to its requirement and necessity (91.4 per cent), easily adapt to one's personal approach (80 percent). The cluster was 56.4 percent of the variance

6.4.4 Factor 2: Management of system performance

Items loading on Factor 2 are as follows: Benefits that can be achieved when implementing Enterprise Resource Planning in South African Small Medium Enterprises the following are the items which are load in Factor 2 together with their percentage: offers increased productivity (73%), leads to the improvement of cash management (72%), improves the management of cost centres (68%).

6.4.5 Factor 3: knowledge of the production process

Items loading on Factor 3 are as follows: Benefits that can be achieved when implementing Enterprise Resource Planning, the following are the items which are load in Factor 3 together with their percentage 'Enables better monitoring of inventory levels (75%), increases flexibility of the invoicing possibilities (64%), implementation leads to automation of cost control operations (61%), enables better resource management (47%)

6.4.6 Factor 4: Accuracy on organisational performance

Benefits that can be achieved when implementing Enterprise Resource Planning enables more accurate calculation of the selling price (75%), monitors all tasks in the organisation (56%), offers increased accuracy of sales transaction data (50%).

6.5. Section D: Enterprise Resource Planning (ERP) Motivation

Table 6.11: Enterprise Resource Planning (ERP) Motivation

Enterprise resource planning motivation:	Mean	Std. Deviation	Rank
Is to improve business processes	4.26	0.733	1
Was to gain strategic advantage	4.17	0.805	2
Was to improve interaction	4.17	0.739	3
Was to improve communication with suppliers	4.15	0.869	4
Was to improve communication with customers	4.14	0.739	5
Was the pressure to keep up with the competitors	4.13	0.700	6
To simplify systems	4.13	0.70	7

Table 6.11 shows respondents ranking of enterprise resource planning motivation' is ranked first 'to improve business processes' with a mean of 4.26 and standard deviation (SD) of 0.733,'second was 'to gain strategic advantage 'with a mean of 4.17and standard deviation of 0.805, ranked third was to improve interaction with a mean of 4.17 and SD of 0.739. The fourth factor was ''to improve communication' with suppliers with a mean of 4.5 and standard deviation of 0.869. Fifth was' to improve communication with customers' with a mean of 4.14 and SD of

0.739 The sixth factor was 'the pressure to keep up with the competitors' with a mean of 4.13 and standard deviation of 0.700, seventh factor was 'to simplify systems with a mean of 4.12 and SD of 0.756 .

Table 6.12 Correlation Matrix

Correlation Matrix

		D4	D5	D6	D7
Correlation	D4	1,000	0,486	0,417	0,402
	D5	0,486	1,000	0,643	0,450
	D6	0,417	0,643	1,000	0,624
	D7	0,402	0,450	0,624	1,000

6.5.1 Results from exploratory factor analysis

Before performing the principal component analysis (PCA), the suitability of information for factor analysis was assessed. The correlation matrix gives the correlation between each item and it should have a coefficient value of above 0.3 as presented in Table 6.12. As shown in Table 6.13, the KMO measure of sampling adequacy achieved a value of 0.687, exceeding the recommended minimum value of 0.6. The Bartlett's test of sphericity should be less than 0.05 and in this case is 0.0 which is the acceptable value.

Tables 6.11 to 6.15 and Fig 6.9 present the results from enterprise resource planning performance Out of the seven (7) variables listed, the following two (2) were omitted:' is easy to use' (B.2), 'easy to implement' was omitted because exceeded 1 and communality is not supposed to exceed 1 (B.1) was omitted because. Only five B1 is also omitted because it has an MSA value of 0.247 and MSA values should be 0.6. Five (5) Variables were identified as potential attributes to measure the performance of ERP from a technical design perspective. As shown in Table 6.6 the total variance of these factors was as follows: Factor 1 (56.374 per cent) and Factor 2 (20.705 per cent). The total cumulative variance is 64.142 per cent.

Tables 6.13 and 6.14 represent the correlation matrix of factor analysis and the KMO and Bartlett's Test. As seen in Table 6.13 the correlation matrix show that coefficients are above 0.3 and in Table 6.14 the KMO measure of sampling adequacy reached a value of 0.730, greater than the minimum recommended value of 0.6.

The table below of factor analysis on correlation matrix shows that two items are being omitted because they regarded as weak items. Item B2 was omitted from the table because

its commonality exceeded 1 and communality is not supposed to exceed 1. B1 is also omitted because it has an MSA value of 0.247 and MSA values should be 0.6.

Table 6.13 KMO and Bartlett's

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.730
Bartlett's Test of Sphericity	Approx. Chi-Square	131.982
	df	6
	Sig.	0.000

Table 6.14 rotation matrix

Factor Matrix[a]	
	Factor
	1
D6	0,847
D5	0,749
D7	0,683
D4	0,568
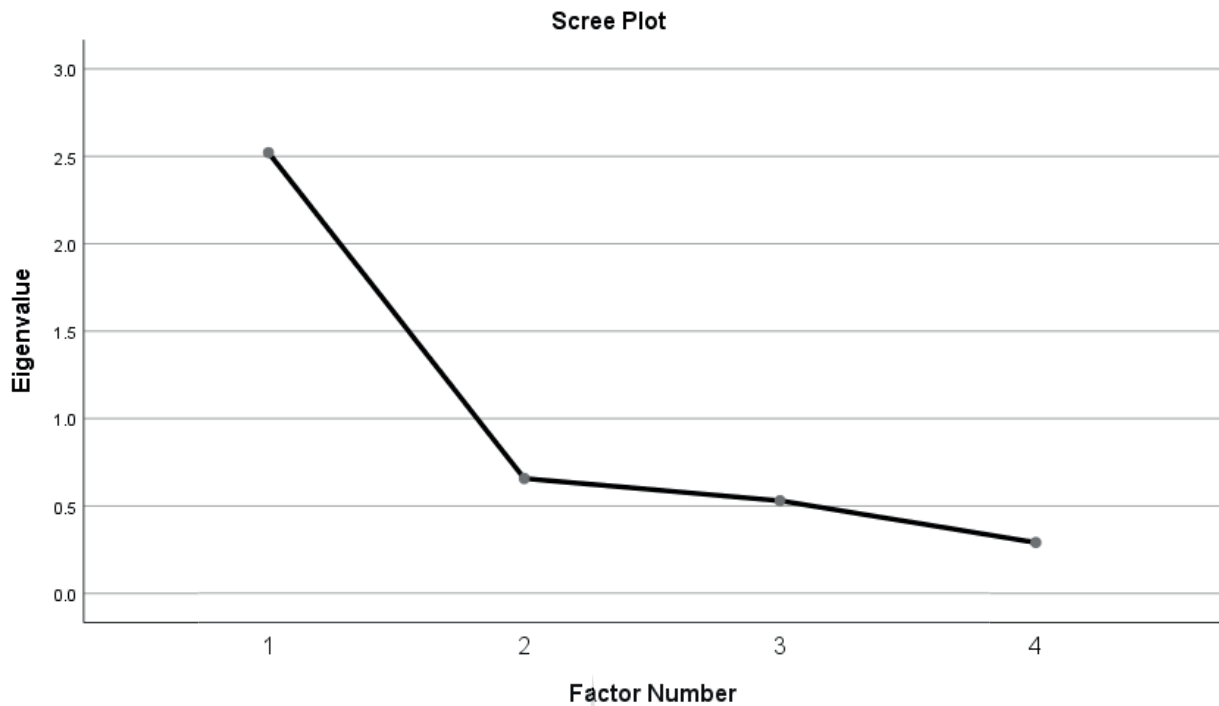
Figure 6.9 Scree plot for factor one

Total variance table

The total variance table tells us that, for section D we have only the initial eigenvalue over 1, which means we are going to have only one factor.

Table 6.15. Total variance

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**2,521**	63,033	**63,033**	2,068	51,710	51,710
2	0,657	16,432	79,465			
3	0,530	13,253	92,718			
4	0,291	7,282	100,000			
Extraction Method: Principal Axis Factoring.						

6.5.2 Factor 1: Motivation

Based on the study of the fundamental relations between the variables in each factor, the following analysis was made. Factor 1: Motivation. The name has been taken from an in-

depth analysis of the variables which have been grouped together after the three variables have been omitted. There variables were D1" was to simplify the system", D2 "was to improve interaction" and D3" was to improve communication with suppliers".

6.6 SECTION E: ENTERPRISE RESOURCE PLANNING FACTORS

Table 6.16: ENTERPRISE RESOURCE PLANNING FACTORS

Statements:	Mean ($\bar{x}$)	Std. Deviation (σX)	Rank (R)
The implementation team	4.21	0.715	1
Top management support	4.16	0.707	2
Business process	4.07	0.728	3
The project champion	4.04	0.898	4
Business reengineering	3.98	0.864	5
Enterprise Resource Planning (ERP) customization	3.94	1.023	6
Vendors support/ consultants	3.93	0.924	7
Partnership with vendors	3.89	0.952	8
User involvement	3.82	1.029	9
Data analysis conversion	3.79	0.967	10
User training provided	3.91	0.954	11

Table 6.16 reveals the respondents' rankings of the items that must be considered when implementing Enterprise Resource Planning (ERP) system in South African SMEs. It shows that 'the implementation team ' was ranked first with a mean of 4.21 and standard deviation (SD) of 0.6715; 'top management support' was ranked second with a mean of 4.16 and SD of 0.707; 'business process ' was ranked third with a mean of 4.07 and SD of 0.728; 'the project champion ' was ranked fourth with a mean of 4.04 and SD of 0.898; 'business reengineering ' was ranked fifth with a mean of 3.98 and SD of 0.864; and 'Enterprise Resource Planning (ERP) customization ' was ranked sixth with a mean of 3.94 and SD of 1.023. In addition, 'Vendors support/ consultants' was ranked seventh with a mean of 3.93 and SD of 0.924; 'partnership with vendors' was ranked eighth with a mean of 3.89 and SD of 0.952; 'user involvement' was ranked ninth with a mean of 3.82 and SD of 1.029; 'data analysis conversion' with a mean of 3.79 and SD of 0.967 tenth and lastly 'user training provided' with mean of 3.91 and SD 0.954

6.6.1 Results from Exploratory Factor Analysis

Before performing the principal component analysis (PCA), the suitability of information for factor analysis was assessed. The correlation matrix gives the correlation between each item, and it should have a coefficient value of above 0.3 as presented in Table 6.17. As shown in Table 6.18, the KMO measure of sampling adequacy achieved a value of 0.776, exceeding the recommended minimum value of 0.6, and the Bartlett's test of sphericity should be less than 0.05 and in this case is 0,0 which is the acceptable value. Tables 6.16 to 6.20 and Fig 6.10 resent the results from enterprise resource planning factors. Out of the eleven (11) variables only one variable was omitted: Data analysis conversion (E, 10) was omitted because its communality exceeded 1 and communality is not supposed to exceed 1. Ten variables were identified as potential factors that can affect the implementation of ERP.

The results from the EFA on the factors that must be considered when implementing Enterprise Resource Planning (ERP) system are presented in Tables 6.17. Out of eleven (11) only one was omitted: 'self-organising' (E10), 'Data analysis conversion'. 'Ultimately, ten (10) ERP factors were identified to have to be considered when implementing ERP in the South African small and medium enterprise.

Rotated factor matrix

The rotated factor matrix shows us which items are grouped in each factor, and each item will be given a loading on appropriate a factor. In section C we have four factors, Factor 1 consists of E8, E7and E9 with the loading values of 0.741,0.668, and 0.654 respectively. Factor 2 consists of E6, E5 and E4 with the loading value of 0.856, 0746 and 0.629 respectively. Factor 3 consists of E3, E2, E1 and E11 with loading values of 0.891,0.651,0.592 and 0.359 respectively

Table 6.17: Correlation matrix

		E1	E2	E3	E4	E5	E6	E7	E8	E9	E11
		Correlation Matrix									
Correlation	E1	1,000	0,773	0,531	0,280	0,272	0,319	0,405	0,447	0,512	0,336
	E2	0,773	1,000	0,585	0,313	0,204	0,285	0,528	0,539	0,629	0,354
	E3	0,531	0,585	1,000	0,356	0,274	0,196	0,091	0,206	0,423	0,370
	E4	0,280	0,313	0,356	1,000	0,593	0,517	0,498	0,450	0,210	0,199
	E5	0,272	0,204	0,274	0,593	1,000	0,692	0,494	0,390	0,300	0,358
	E6	0,319	0,285	0,196	0,517	0,692	1,000	0,650	0,537	0,382	0,304
	E7	0,405	0,528	0,091	0,498	0,494	0,650	1,000	0,657	0,489	0,263
	E8	0,447	0,539	0,206	0,450	0,390	0,537	0,657	1,000	0,701	0,311
	E9	0,512	0,629	0,423	0,210	0,300	0,382	0,489	0,701	1,000	0,477
	E11	0,336	0,354	0,370	0,199	0,358	0,304	0,263	0,311	0,477	1,000

Table 6.18: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.776
Bartlett's Test of Sphericity	Approx. Chi-Square	570.950
	df	45
	Sig.	0.000

Table 6.19: Rotated factor matrix

	Rotated Factor Matrix[a]		
	Factor		
	1	2	3
E8	**0,741**	0,367	
E7	**0,668**	0,520	
E9	**0,654**		0,404
E5		**0,856**	
E6	0,358	**0,746**	
E4		**0,629**	
E3			**0,891**
E2	0,633		**0,651**
E1	0,470		**0,592**
E11			**0,359**

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.[a]
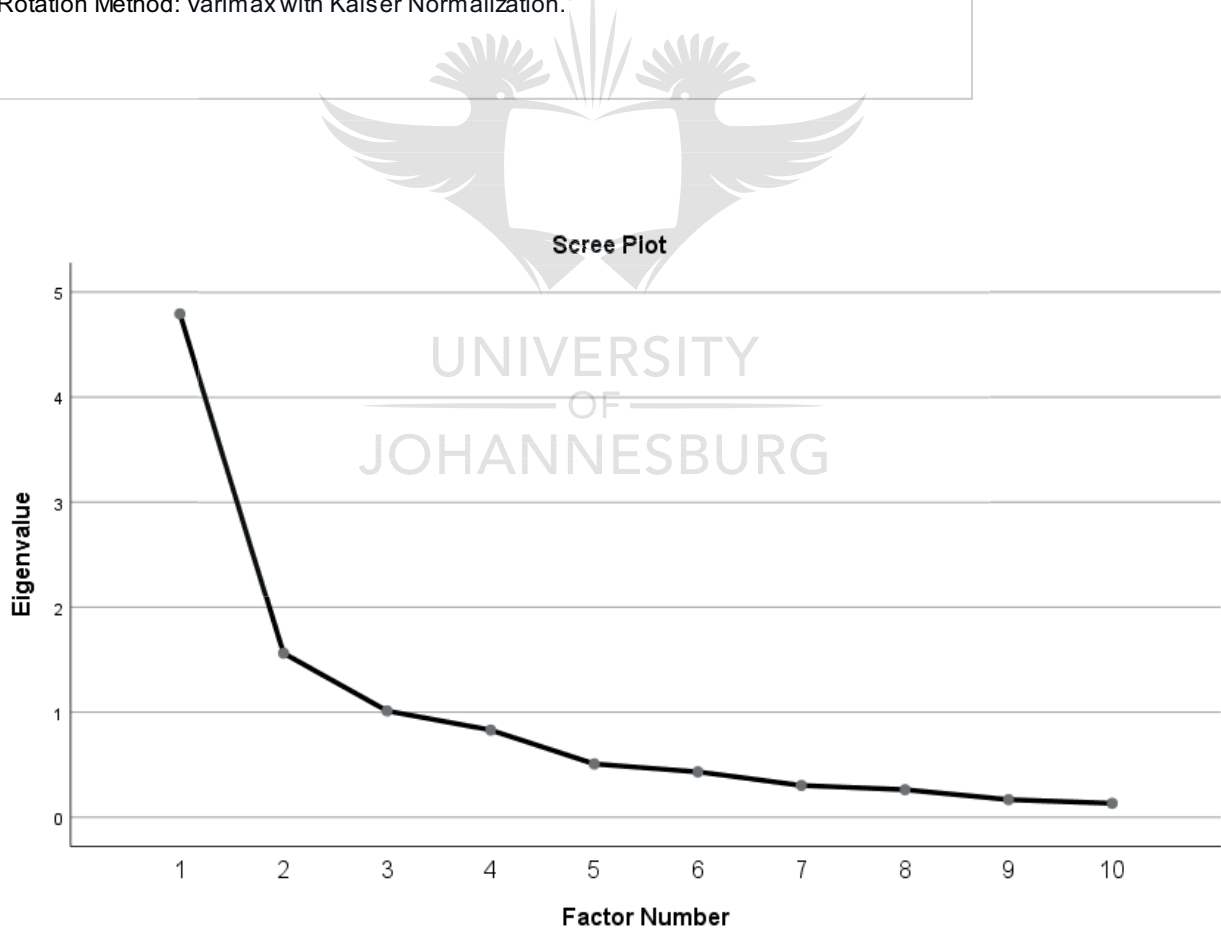
Scree Plot

Figure 6. 10Scree plot for factor one

Table 6.20: Total variance explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**4,792**	47,920	47,920	4,459	44,592	44,592	2,275	22,754	22,754
2	**1,562**	15,619	63,539	1,275	12,752	57,344	2,227	22,271	45,025
3	**1,012**	10,119	**73,658**	0,730	7,301	64,645	1,962	19,620	**64,645**
4	0,830	8,300	81,958						
5	0,507	5,074	87,032						
6	0,432	4,317	91,349						
7	0,303	3,028	94,376						
8	0,262	2,621	96,997						
9	0,168	1,679	98,676						
10	0,132	1,324	100,000						

Extraction Method: Principal Axis Factoring.

The total variance table for section E shows that we have four initial eigenvalues with values above one. This basically tells us that we are going to have four themes or factors. The eigenvalue was set at a conventional high value of 1.0. In Table 6.20, four factors' eigenvalues exceeded 1.0. These were: Factor 1 (47.920 per cent), Factor 2 (15.619 per cent), Factor 3 (10.119 per cent) and Factor 4 (8.300 per cent). These four factors explain a cumulative percentage of variance of 73.658 before rotation and 64.645 after rotation.

6.6.2 Factor 1: Partnership with users / vendors

Table 6.20 presents factors to be considered when implementing Enterprise Resource Planning within South African Small Medium Enterprises. These are Factor 1:' Partnership with vendors' (74%), Enterprise Resource Planning (ERP) customization (89%), and User involvement (86%).

6.6.3 Factor 2: Business processes

Factors to be considered when implementing Enterprise resource planning in South African Small and Medium Enterprise Business processes (87%), Business reengineering (75%) Vendors support/ consultant (83%), The project champion (83%)

Factor 3: ERP teams

Factors to be considered when implementing Enterprise Resource Planning in South African Small and medium enterprises are Project champion (83%), the implementation team (86%), top management support (69%), user training provided (37%)

6.7 SECTION F: Barriers and challenges of ERP

Table 6.21: Barriers and challenges of ERP

Statements:	Mean ($\bar{x}$)	Std. Deviation (σX)	Rank (R)
The implementation team	4.21	0.715	1
Top management support	4.16	0.707	2
Business process	4.07	0.728	3
The project champion	4.04	0.898	4
Business reengineering	3.98	0.864	5
Enterprise Resource Planning (ERP) customization	3.94	1.023	6
Vendors support/ consultants	3.93	0.924	7
User training provided	3.91	0.954	8
Partnership with vendors	3.89	0.952	9
User involvement	3.82	1.029	10
Data analysis conversion	3.79	0.967	11

Table 6.21 shows respondents ranking of enterprise resource planning barriers or challenges that can be encountered in South African SMES, it shows that 'The implementation team' was ranked first with a mean of 4.21 and standard deviation (SD) of 0.715, 'Top management support' was ranked second with a mean of 4.16 and standard deviation of 0.707, third was Business process with a mean of 4.07 and SD of 0.728. The fourth item was 'The project champion' with a mean of 4.04 and SD of 0.898, while fifth item was 'Business reengineering' with a mean of 3.98 and SD of 0. 864.The sixth item was 'Enterprise Resource Planning' (ERP) customization' with a mean of 3.94 and standard deviation of 1.023, seventh was 'Vendors support/ consultants' with a mean of 3.93 and SD of 0.924. The eighth 'User training provided' with a mean score of 3.91 and SD of 0.954. The ninth item was 'Partnership with vendors' with a mean of 3.89 and SD of 0.952, the tenth was 'User involvement', with a mean of 3.82 and SD

of 1.029 and last but not least the eleventh 'Data analysis conversion' with a mean of 3.79 and SD of 0.967.

6.7.1: Results from Exploratory Factor Analysis

Before performing the principal component analysis (PCA), the suitability of information for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of coefficients of above 0.3 as presented in Table 6.24. As shown in (table 6.25) the KMO measure of sampling adequacy achieved a value of 0.661, exceeding the recommended minimum value of 0.6 and the Bartlett's test of sphericity was also statistically significant (less than 0.05), thus supporting the factorability of the correlation matrix.

Before performing the principal component analysis (PCA), the suitability of information for factor analysis was assessed. The correlation matrix gives the correlation between each item and its value should have a coefficient of above 0.3 as presented in Table 6.22. As shown in Table 6.25, the KMO measure of sampling adequacy achieved a value of 0.661, exceeding the recommended minimum value of 0.6. The Bartlett's test of sphericity should be less than 0.05 and in this case is 0.0 which is the acceptable value. Table 6.21 to 6.2647 and Fig 6.27 presents the results from barriers or challenges that can be encountered when implementing enterprise resource planning in south African small and medium enterprises. Out of the seven (7) variables only one variable was omitted: 'Has lack of support Data' (F.4) was omitted because its communality exceeded 1 and communality is not supposed to exceed 1. Six variables were proven to be potential factors that can affect the implementation of ERP.

Table 6.22: Correlation matrix

Correlation Matrix		F1	F2	F3	F5	F6	F7
Correlation	F1	1,000	0,483	0,096	0,094	0,330	0,437
	F2	0,483	1,000	0,421	0,370	0,249	0,386
	F3	0,096	0,421	1,000	0,441	0,134	0,166
	F5	0,094	0,370	0,441	1,000	0,591	0,461
	F6	0,330	0,249	0,134	0,591	1,000	0,703
	F7	0,437	0,386	0,166	0,461	0,703	1,000

The rotated factor matrix shows us which items are grouped in each factor, and each item will be given a loading on appropriate factor. In section E we have three factors, Factor 1 consists

of F6 and F7 with the loading values of 0.915 and 0.679, Factor 2 consist of F3 and F5 with the loading value of 0.645 and 0.641. The other factors are Factor 3 which consists of F1 and F2 with the loading values of 0.731 and 0.622

The total variance table for section E shows that we have three initial eigenvalues with values above one. This basically tells us that we are going to have three factors. The eigenvalue was set at a conventional high value of 1.0. In Table 6.27, four factors with eigenvalues exceeding 1.0: Factor 1 (47.319 per cent), Factor 2 (18.646 per cent) and Factor 3 (17.261 per cent). These three factors explain a cumulative of 83.226 before rotation and 66.263 after rotation.

Table 6.23: Rotated factor matrix

	Factor		
	1	2	3
F6	0,915		
F7	0,679		0,393
F3		0,645	
F5	0,587	0,641	
F1			0,731
F2		0,544	0,622

Rotated Factor Matrix[a]

Table 6.24: Correlation matrix

Correlation Matrix

		F1	F2	F3	F5	F6	F7
Correlation	F1	1,000	0,483	0,096	0,094	0,330	0,437
	F2	0,483	1,000	0,421	0,370	0,249	0,386
	F3	0,096	0,421	1,000	0,441	0,134	0,166
	F5	0,094	0,370	0,441	1,000	0,591	0,461
	F6	0,330	0,249	0,134	0,591	1,000	0,703
	F7	0,437	0,386	0,166	0,461	0,703	1,000

Table 6.25: KMO and Bartlett's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,661
Bartlett's Test of Sphericity	Approx. Chi-Square	209,856
	df	15
	Sig.	0,000

Table 6.26: Rotated factor matrix

Rotated Factor Matrix[a]			
	Factor		
	1	2	3
F6	0,915		
F7	0,679		0,393
F3		0,645	
F5	0,587	0,641	
F1			0,731
F2		0,544	0,622

Figure 6.11 Scree plot for factor one

Table 6.27: Total variance

	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**1,800**	60,004	**60,004**	1,226	40,853	40,853
2	0,667	22,226	82,230			
3	0,533	17,770	100,000			

6.7.2 Factor 1: Maintenance challenges / barriers

Challenges or barriers that can be encountered when implementing Enterprise Resource Planning in the South African Small Medium Enterprise The following are the items which are load in Factor 1 together with their percentage 'Is too difficult to maintain' (92%), Is 'too difficult to manage' (68%),

6.7.3 Factor 2: Management support challenges / barriers

Challenges or barriers that can be encountered when implementing Enterprise Resource Planning in the South African Small Medium Enterprise The following are the items which are load in Factor 2 together with their percentage 'Is disorganised' (65%), 'Has lack of maintenance' (64%),

6.7.4 Factor 3: Risk and cost challenges/ Barriers

Challenges or barriers that can be encountered when implementing Enterprise Resource Planning in South African Small Medium Enterprise The following are the items which are load in Factor 3 together with their percentage 'too expensive to implement' (73%), 'lacks vendor support' (62%), 'implementation leads to automation'.

6.8 CONCLUSION

The plan of action as well as deliberations concerning the collection of data were considered during the inception of the chapter. The results gathered from the study were then presented using frequency tables as well as charts. The results obtained from the study were analysed following the objectives described in the problem area. The intention was to determine whether

the literature review describes exactly what is happening in reality when coming to the execution of ERP within SMEs. The results presented a series of tests to determine accuracy and reliability of the data.

Discussion of Findings

7.1 Introduction

The purpose of the chapter is to investigate factors that can affect the implementation of enterprise resource planning in South African small and medium organisations. From the previous chapter I have established the fact that data has been gathered from surveys. The information provided from the questionnaire was presented in the form of descriptive statistics. Findings utilised Tables and bar graphs to state the findings. The aim of the chapter is to review and provide results of the analysis.

7.1.1 Background information results

This information was obtained from questionnaires. The descriptive analysis illustrates that 47% are males while females accounted for 53% of the sample. The sample distribution according to ethnicity reveals that 88 percent of respondents were from the black population, 10 percent were from the white population and a mere 2 percent were from the coloured minority. The sample of distribution according to age group revealed that 66 percent of respondents were aged between 20-29, 20 percent were from 30-39, 10 percent were from 40-49, 4 percent were from 50-59. In addition, education levels, according to respondents are as follows: those with grade 12 equates to 11%, 21% had a post matric, diploma or certificate, 29% had a baccalaureate degree, 39% had post graduate degree. The sample distribution according to type of organisation shows that 21% work in food supplies, 19% in non-government organisations, 12% in government organisations, 9% in regular government, 22% in associations, 11% as consultants and lastly 6% others. Small-medium enterprise experience according to respondents are follows: 48% less than 2 years, 25% between 5-10 years, 13% between 10-15 years, 8% between 15-20 years and lastly 6% more than 20 years.

The following research questions were established to address and identify research problems:

RQ 1: How will the organisation measure the performance of Enterprise Resource planning (ERP) system from a technical design perspective?

RQ 2: How will the organisation benefit by executing Enterprise Resource planning (ERP) systems?

RQ 3: What is the motivation for implementing Enterprise Resource planning (ERP) systems in your organisation?

RQ 4 What are the factors related to the implementation of Enterprise Resource Planning (ERP) system?

RQ 5 What are the barriers and challenges that can be encountered when implementing ERP systems?

7.2 Research question 1

RQ1: How will the organisation measure the performance of the Enterprise Resource planning (ERP) system from a technical design perspective?

7.2.1 Findings

The Result from the descriptive and exploratory factor analysis are used to answer the research question.

7.2.2 Factor 1: ERP effective usage and adaptability

Descriptive analysis of the performance of the Enterprise Resource planning (ERP) system after implementation in South African SMES. 'Up and running according to its requirements and necessity' with a standard deviation of 0.861 and MIS of 3.63; 'easily adapt to one's personal approach' with standard deviation of 0.839 and MIS of 3.73.

7.2.3 Factor 2:   Evaluation of system performance

Descriptive analysis of the performance of enterprise resource planning within the small and medium enterprise, 'includes the necessary features with a standard deviation of 0.913 and MIS of 3.79, 'does what it should' with a standard deviation of 0.973 and MIS of 3.68, 'meets my requirement' with a standard deviation 0.779 and MIS of 3.89.

7.2.4 Discussion

The findings have established that employee's performance has improved reliably in organisations that use the system. When comparing large organisations and small organisations the roles and responsibilities of employees within the SMEs are not defined correctly, and as a result, employees tend to perform various tasks. Therefore, it is a challenge to replace them. Moreover, there is a problem as a result of the limited number of employees employed by the SMEs. The usage of integration and transparency of the ERP systems simplified replace ability of staff in cases of their absence. Additionally, the findings have established challenges involving the ERP system business activity like value decrease and accrued productivity.

7.3 Research question 2

RQ2: How will the organisation gain advantage by executing Enterprise Resource arranging (ERP) systems?

7.3.1 Findings

'Enables better monitoring when coming to payments' was ranked first with a mean of 4.00 and standard deviation (SD) of 0.804, 'enables more accurate customer invoices' was ranked second with mean of 3.93 and standard deviation of 0.820, thirdly ranked was 'increases the focus on customer value added activities' with a mean of 3.88 and SD of 0.844. The fourth item was 'enables better monitoring of inventory levels' with mean of 3.81 and SD of 0.813, while fifth factor was' enables better resource management' with mean of 3.78 and SD of 0. 811. The sixth factor was 'increases the flexibility of the invoicing possibilities' with mean of 3.73 and standard deviation of 0.874, seventh factor was 'monitors all tasks in the organisation' with a mean of 3.72 and SD of 1.006.

In addition, the eighth   was' improves the management of cost centres ' with a mean of 3.69 and SD of 1,048 the ninth factor was ' helps to improve customer service' with a mean of 3.65 and SD of 1.048, the tenth was 'enables more accurate calculation of the selling price' with a mean of 3.63 and SD of 1.062 the eleventh 'offers increased productivity' with a mean of 3.62 and SD of 1.062 twelve we have 'implementation leads to automation of cost control operations' with mean of 3.62 and SD of 1.023. This shows that when coming to the statements 'offers increased productivity' and 'implementation leads to automation of cost control operations' respondents felt that their contribution is the same, because they have the same mean score of 3.62. Thirteenth was 'offers increased accuracy of sales transaction data' with a mean of 3.54 and SD of 0.578. Lastly the fourteenth items were' leads to the improvement of cash management' with a mean of 3.46 and SD of 1.009.

7.3.2 Discussion

Empirical findings for the research identified problems in relation to overall the performance of ERP system. The respondents showed they have small understanding when it comes to examining aspects when it comes to the ERP system implementation. This was evident by the manner they have responded to questions.

7.3.3 Research question 3

RQ3: What is the motivation for implementing Enterprise Resource planning (ERP) systems in your organisation?

7.3.4 Findings

Results from the descriptive and exploratory factor analysis were used in answering this research question.

7.3.5 Descriptive analysis

ERP purpose 'is to improve business processes' was ranked first with a mean of 4.26 and standard deviation (SD) of 0.733,' to gain strategic advantage 'was second with a mean of 4.17and standard deviation of 0.805, thirdly ranked was 'to improve interaction' with a mean of 4.17 and SD of 0.739. The fourth factor was 'Was to improve communication with suppliers' with a mean of 4.15 and standard deviation of 0.869. The firth factor was 'to improve communication with customers' with a mean of 4.14 and standard deviation of 0.739, The sixth factor was 'was the pressure to keep up with the competitors' with a mean of 4.13 and SD of 0.700. The seventh was provided was' was to simplify systems with a mean of 4.13 and SD of 0.70.

7.3.6 Discussion

Empirical findings for the research revealed that motivation has the effect on the outcome of ERP system implementation. This result from the organisations which did not intend to improve their businesses by incorporating ERP system resulting from the fear of failure. In addition, more emphasis was put towards the systems' functionality and information quality provided by the systems.

7.4 Research question 4

RQ 4 What can be the factors related to the implementation of Enterprise Resource Planning (ERP) systems?

7.4.1 Findings

The 'implementation team' was 1st with a mean of 44.21 and standard deviation (SD) of 0.671; 'high management support' was second with a mean of 4.16 and SD of 0.707; 'business process' was placed third with a mean of 4.07 and SD of 0.728; 'the project champion' was placed fourth with a mean of 4.04 and SD of 0.898; 'business reengineering' was placed fifth with a mean score of 3.98 and SD of 0.864. Moreover 'Enterprise Resource coming up with (ERP) customization' was placed sixth with a mean of 3.94 and SD of 1.023. In addition, 'Vendors support/ consultants' was placed seventh with a mean of 3.93 and SD of 0.924; 'partnership with vendors' was placed eighth with a mean of 3.89 and SD of 0.952; 'user involvement' was

placed ninth with a mean of 3.82 and SD of 1.029; 'data analysis conversion' with a mean of 3.79 and SD of 0.967 tenth and last 'user coaching provided' with mean 3.91 and SD 0.954.

7.5 Research question 5

RQ 5: What are the barriers and challenges that can be encountered when implementing ERP systems

7.5.1 Findings

Results from the descriptive and exploratory correlational analysis were utilized in this analysis. 'The implementation team' was placed first with a mean of 4.21 and standard deviation (SD) of 0.715, 'high management support' was placed second with a mean of 4.16 and standard deviation of 0.707, third was 'Business method' with a mean of 4.07 and Standard deviation of 0.728 The fourth issue was 'The project champion' with a mean of 4.04 and standard deviation of 0.898, whereas fifth issue was 'Business reengineering' with a mean of 3.98 and standard deviation of 0.864.The sixth issue was ' Enterprise Resource designing (ERP) customization ' with a mean of 3.98and standard deviation of 0.864 seventh issue was 'Vendors support/ consultants ' with a mean of 3.93 and Standard deviation of 0.924. The eighth was 'User coaching offer 'with a mean of 3.91 and Standard deviation of 0.954, the ninth issue was 'Partnership with vendors' with a mean of 3.89 and standard deviation of 0.952, the tenth was and last the eleventh 'Data analysis conversion' with a mean of 3.79 and Standard deviation of 0.967.

7.5.2 Discussion

Empirical findings for the analysis discovered, data awareness, and coaching awareness as the main issues or challenges for implementation of the enterprise resource designing in small and medium enterprises. This can be supported by the study of Gamage and Hyde (2012) that identifies lack of understanding and lack of user coaching provided because of the problematic aspects which will have an effect on the economical running or usage of ERP systems

7.6 Conclusion

The data obtained from the questionnaires as answered by the respondents regarding factors influencing the implementation of Enterprise resource designing in South African SMEs. In the next chapter, the study goals are evaluated in relation to the results of the study, demonstrating how the study goals are achieved. Recommendations are also presented and mentioned with relevance to the goals of the analysis.

CHAPTER EIGHT

CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

The purpose of the chapter is to analyse the factors that may have an effect on the implementation of enterprise resource planning in South Africa's Small and Medium organisations. The main target   is to debate the findings from the analysis. The findings are mentioned by relating literature discussed in Chapters three and six. This shows if the analysis questions are answered from the information analysed in Chapter six. The aim of the chapter is to supply the results that are obtained from the findings, and additionally offer specified recommendations for additional study. The literature within this research has shown the implementation of ERP systems and technology   bringing increased competitiveness and innovation to businesses and to the world at large. In addition, it has shown particular aspects regarding ERP systems   implementation, indicating the fact that while a number of businesses had successfully implemented the ERP systems, research has indicated that there are organisations which are   still struggling to implement as a result of number of reasons.

8.2 Conclusions

Below are the research objectives and explanations on how they were achieved:

- ❖ To determine the manner in which the organisation can measure the performance of Enterprise Resource planning (ERP) system from a technical design perspective
- ❖ To determine how the organisation will profit when implementing Enterprise Resource planning (ERP)
- ❖ To determine ways in which motivation will assist the organisation when it comes to implementing Enterprise Resource planning (ERP) systems
- ❖ To determine the factors related to the implementation of Enterprise Resource Planning (ERP) systems
- ❖ To determine the barriers and challenges that can be encountered when implementing ERP systems

8.2.1 Conclusion for Research Objective 1: To determine how the organisation can measure the performance Enterprise Resource planning (ERP) system from a technical design perspective

It is established from the results of the primary information that 'is simple to implement', 'is easy to use', 'meets my requirement', 'includes the obligatory features',' 'can do what it should', 'easily adapt to one's personal approach', 'is up-and running in step with its demand and necessity'. moreover, the literature proves that these principles have the pliability to measure the performance of enterprise resource planning.

The results obtained from the respondents by the use of survey revealed that 'Is easy to use', 'Includes the necessary requirements', 'Includes the necessary features', 'easily adapt to one's personal approach', 'is up and running according to its requirements and necessity' are the seven most essential factors that measure the performance of the enterprise resource planning within South African Small and Medium Enterprises. In addition, the results obtained from the factor analysis also indicate that the top three factors are 'is up-and running according to its requirement and necessity', 'easily adapt to one's personal approach', 'meets my requirement'. This tells us that the research objective still needs to be worked on.

8.2.2 Conclusion for Research Objective 2: To determine how the organisation will profit when implementing Enterprise Resource planning (ERP)

It is established from the results of the first data that 'offers augmented accuracy of sales dealings data', 'enables higher resource management', 'enables higher observation of inventory levels',' will increase the pliability of the invoicing possibilities', 'implementation ends up in automation of price control', 'operations improves the management of price centres', 'offers augmented productivity', 'leads to the advance of money management', 'monitors all tasks within the organisation', 'enables a lot of correct calculation of the mercantilism price', 'helps to boost client service', 'increases the focus on customer value added activities' 'enables higher observation once returning to payments', 'enables a lot of correct client invoices' are the known advantages of implementing Enterprise Resource planning in South African Small and Medium Enterprises which will additionally assist within their success .

Findings from the survey results revealed that 'increases the focus on customer value added activities', 'enables better monitoring when coming to payments', 'enables more accurate

customer invoices',' helps to improve customer service', 'offers increased productivity', 'leads to the improvement of cash management' 'improves the management of cost centres' are the top amongst the potential benefits of implementing Enterprise Resource Planning. Results of the factor analysis also revealed that 'customer benefits', 'management of system performance', 'knowledge of the production process' are the three factors of ERP. As the result, this research objective was achieved both from the literature and the structured questionnaire.

8.2.3 Conclusion for Research Objective 3: To determine the motivation behind the implementing of Enterprise Resource planning (ERP) systems

It is established from the result of the primary data that the motivation behind the implementing of Enterprise Resource planning (ERP) was to 'simplify systems', was to 'improve interaction' ,was ' to improve communication with suppliers', was ' to gain strategic advantage', was' to gain strategic advantage', was' the pressure to keep up with the competitors', was ' to provide contribution to the company', 'to provide functionality' and to 'compete in the market', and ' to provide useful information when needed'. Moreover, the literature proves that these principles are the motivation tool to measure the enterprise resource planning.

Findings from the survey revealed that to 'enhance communication with customers', to 'realize strategic advantage', and to 'enhance business processes' are the highest four items influencing the motivation behind the implementing of Enterprise Resource designing (ERP). Therefore, the research objective was achieved both in terms of the literature and the structured questionnaire

8.2.4 Conclusion for Research Objective 4: To determine the factors related to the implementation of Enterprise Resource Planning (ERP) system

Findings from the literature revealed that in order to successfully implement enterprise Resource Planning within Small and Medium Enterprises, there are factors that need to be considered which are 'top management support', 'the implementation team', 'the project champion', 'Vendors support/ consultants', 'Business process', 'Partnership with vendors', 'Business reengineering', 'Enterprise Resource Planning (ERP) customization', 'User involvement' ,' Data analysis conversion', 'User training provided'. These are the factors that could be considered to ensure the implementation of ERP is done appropriately and the improvement when of organisational day to day activities is smooth.

From the collected findings from the respondents, it was established that 'top management support, implementation team, project champion, vendors support/ consultants, business process, partnership with vendors, business reengineering, enterprise resource planning are the most important aspects and factors that needs to be considered when implementing ERP, because they are the driving force of the entire project. Therefore, it can be deduced that the research objective was achieved.

8.2.5 Conclusion for Research Objective 5: To determine the barriers and challenges that can be encountered when implementing ERP systems

 Findings from the literature revealed that a lack of a well-defined maintenance approach is one of the main challenges preventing the implementation of Enterprise Resource Planning. In addition, it established that it is difficulty to management, difficult to maintain, is time consuming to implement, has lack of support, and is too expensive to implement are regarded as other challenges preventing the success implementation of Enterprise Resource Planning.

Moreover, findings from the survey results revealed that a' lack of vendor support'; a' lack of maintenance'; 'too difficult to manage';' is time consuming to implement', are the top seven challenges preventing the implementation of Enterprise Resource Planning. Results of the factor analysis also revealed 'Maintenance challenges / barriers', 'Management support challenges / barriers', 'Risk and cost challenges/ Barriers' as the three factors preventing the implementation of Enterprise Resource Planning in South African Small and Medium Enterprises. Hence, the research objective was achieved both from the literature and the structured questionnaire.

8.3 General research conclusions

The literature review revealed that there are various sources which can be used to assemble information regarding the implementation of Enterprise Resource planning among South African SMEs. The results gathered from the literature review iterate the findings of the analysis. Therefore, the results established within this research support the information provided by the very important literature sources that may assist in recognizing the barriers or challenges which will influence the implementation of Enterprise Resource planning in SMEs. Findings from this analysis supported previous research done by students and lecturers.

Furthermore, the analysis has uncovered techniques that may be used by small and medium organisations to successful implement Enterprise Resource planning. The analysis conjointly shows the findings that relate to techniques that may influence the implementation of ERP African countries. Additionally, the study established different approaches to deal with the factors influencing the implementation of Enterprise Resource planning among South African SMES. Findings from the analysis shows many approaches that an organization will use to alleviate factors influencing the implementation and therefore the processes regarding it. Moreover, the analysis conjointly targeted the competitive benefits of organisations with entrenched implementation. The findings revealed that such organisations have low build-up, low production expenses, low expense in product sold and low costs have been practiced relative to enhanced performance.

8.4 Recommendations

This research has identified the problems that can be encountered when implementing Enterprise Resource planning in South African SMEs. This was achieved by recognising the essential factors influencing ERP implementation and what can assist in improving them in order to reach optimal satisfaction which then increases the business revenue. The implementation procedure is vital in all organisations of any size.

When it involves literature on crucial success factors in implementing ERP in small and medium enterprises, top management ought to work closely with ERP customers. Organisations need to maintain improved communication and conflict resolution between business teams (Maditinos et al., 2012). Everton (2016) declared that top management ought to invest in additional corporations to make sure of success. This can facilitate competition within the market, and organizations ought to even have open communication to encourage workers (Chenhall, Kallunki, Silvola, 2011). By maintaining close relationships both internally and externally, all stakeholders concerned will be able to assist in developing the products and services of high technology.

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APPENDIX 1: INTRODUCTORY LETTER

Dear Sir/Madam,

Dear Sir/Madam,

The University of Johannesburg are presently conducting a study aimed at exploring successful indicators connected with the application of ERP in South African SMES. The success structure consists of four success indices for information systems (IS) and 13 success factors. So, we kindly ask you to finish the following brief questionnaire.

I thank you for your time and collaboration in this matter. Please do not hesitate to contact me at 084 255 0637 or by e-mail at tankisophutsisi240@gmail.com if you need more information about the project.

Yours sincerely

Tankiso Phutsisi

University of Johannesburg

APPENDIX 2: QUESTIONNAIRE SAMPLE

PLEASE ANSWER THE FOLLOWING QUESTIONS BY CROSSING (✗) THE RELEVANT BLOCK OR WRITING DOWN YOUR ANSWER IN THE SPACE PROVIDED.

EXAMPLE of how to complete this questionnaire:

Your gender?

Gender

Male	1
Female	2

Section A – Background information

This section of the questionnaire refers to background or biographical information. Although we are aware of the sensitivity of the questions in this section, the information will allow us to compare groups of respondents. Once again, we assure you that your response will remain anonymous. Your co-operation is appreciated.

ABOUT YOU

1. Gender

Male	1
Female	2

2. Ethnicity

Black	1
White	2
Coloured	3
Indian or Asian	4

3. In which age group are you?

Younger than 20	1
20-29	2
30- 39	3
40-49	4
50-59	5
Older than 59	6
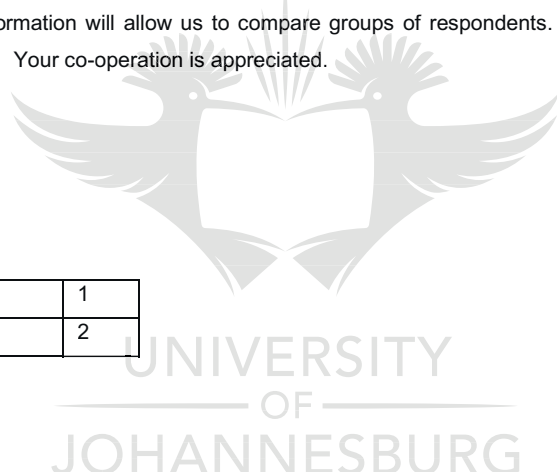
4. Your highest education experience

Grade 11 or lower (Std 9 or lower)	1
Grade 12 (Matric, Std 10)	2
Post matric Diploma or certificate	3
Baccalaureate Degree(s)	4
Post graduate Degree (s)	5

Your work details

 Please supply the following information about your work:

5. Sector represented by your company / organisation

Food Supplier	1
Non-Governmental Organization	2
Government Organization	3
Regulator / Government Authority	4
Association (e.g. trade or industry)	5
Politician	6
Researcher / Academic	7
Consultant	8
Other (please specify)	9

6. Nature of the business:

| Small enterprise: 6-49 workers | 1 |
| Medium enterprise: 50-200 | 2 |

7. Years of experience

Less than 2 years	1
2-5 years	2
5- 10 years	3
10 -15 years	4
15 - 20 years	5
More than 20 years	6

SECTION B: ENTERPRISE RESOURSE PLANNING (ERP) SYSTEM Performance

To what extent do you agree with the following statements regarding the performance of ERP system from a technical design perspective?

The Enterprise Resource Planning (ERP) system		Strongly Disagree	Disagree	Neutral	Strongly Agree	Agree
B1	Is easy to implement					
B2	Is easy to use					
B3	Meets my requirement					
B4	Includes the necessary features					

B5	Does what it should					
B6	Easily adapts to one's personal approach					
B7	Is up-and running according to its requirement and necessity					

SECTION C: ENTERPRISE RESOURCE PLANNING (ERP) BENEFITS

'To what extent do you agree with the following statements regarding ERP system benefits?

	The ERP system:	Strongly Disagree	Disagree	Neutral	Strongly Agree	Agree
	Internal efficiency benefits					
C1	Offers increased accuracy of sales transaction data					
C2	Enables better resource management					
C3	Enables better monitoring of inventory levels					
C4	Increases the flexibility of the invoicing possibilities					
C5	Implementation leads to automation of cost control operations					
C6	Improves the management of cost centres					
C7	Offers increased productivity					
C8	Leads to the improvement of cash management					
C9	Monitors all tasks in the organization					
C10	Enables more accurate calculation of the selling price					
	Customer benefits					
C11	Helps to improve customer service					
C12	Increases the focus on customer value added activities					
C13	Enables better monitoring when coming to payments					
C14	Enables more accurate customer invoices					

SECTION D: ENTERPRISE RESOURCE PLANNING MOTIVATION

To what extent do you agree with the following statements regarding motivation to implement ERP SYSTEMS?

	The companies' motivation:	Strongly Disagree	Disagree	Neutral	Strongly Agree	Agree
D1	Was to simplify systems					
D2	Was to improve interaction					
D3	Was to improve communication with suppliers					
D4	Was to improve communication with customers					
D5	Was to gain strategic advantage					
D6	Is to improve business processes					
D7	Was the pressure to keep up with the competitors					
D8	Is to provide a contribution to the company					

D9	To provide functionality and to compete in the market					
D10	Is to provide useful information when needed					

SECTION E: ENTERPRISE RESOURCE PLANNING FACTORS

The following are the factors that must be considered when implementing an Enterprise Resource Planning (ERP) system. Please select the following according to their importance, BY CROSSING (×) TO THE RELEVANT BLOCK.

	Statements	Not Important	Slightly Important	Moderately Important	important	Very Important
E1	Top management support					
E2	The implementation team					
E3	The project champion					
E4	Vendors support/ consultants					
E5	Business process					
E6	Business reengineering					
E7	Enterprise Resource Planning (ERP) customization					
E8	Partnership with vendors					
E9	User involvement					
E10	Data analysis conversion					
E11	User training provided					

Section F: Barriers / Challenges of ERP implementation

To what extend do you agree with the following statements regarding barriers/ challenges of ERP implementation

	The ERP system:	Strongly Disagree	Disagree	Neutral	Strongly Agree	Agree
F1	Is too expensive to implement					
F2	Lacks vendor support					
F3	Is disorganized					
F4	Has lack of support					
F5	Has lack of maintenance					
F6	Is too difficult to manage					
F7	Is too difficult to maintain					
F8	Is time consuming to Implement					

Additional comments

Please share any further comments that will assist us in understanding the factors influencing the acquisition, acceptance and implementation of the ERP in small medium enterprises in South Africa

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Thank you for your cooperation.

 Your views are highly appreciated.

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