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**DEVELOPING AN INTEGRATED ENTERPRISE RESOURCE PLANNING FRAMEWORK FOR
SOUTH AFRICAN CLOTHING AND TEXTILE INDUSTRIES**

A thesis Submitted in Partial Fulfilment of the Degree of

D Phil in ENGINEERING MANAGEMENT

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OF
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2019

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Declaration

I Khathutshelo Mushavhanamadi declare that this thesis entitled **Developing an integrated Enterprise Resources Planning framework for South African Clothing and Textile Industries** which I hereby submit at the University of Johannesburg, Faculty of Engineering and the Built Environment, School of Engineering Management, for a Doctor of Philosophy in engineering management, is my own work and has not been submitted to any other university.

Signature

May 2019



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This thesis is dedicated to my son **Oratile Rifhemaanda**, and unborn son **Fholisani Jr (FJ) Rinae** for all the courage, support, and motivation.

It is indeed the end of my journey in obtaining a Doctor of Philosophy in Engineering Management.

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Vhandalala fuvhuvhu udola vhufa ha tombo.

Abstract

This research recommends development of an integrated Enterprise Resource Planning (ERP) framework for South African clothing and textile industries, mainly is Small Medium Enterprise (SME). The study and framework will cover ERP Critical Success Factors (CSF), namely: Vision and planning of Project, Choice of an ERP system, Support from Top Management, Project Management, Project Champion, Business Process Re-engineering, Communication, User Training and Education, and Organizational Resistance); ERP implementation process, challenges and benefits of implementing an ERP system. The framework will be used as a plan of implementing an ERP system in Clothing and Textile industries.

The study used Mixed Method approach to identify benefits, critical success factors, and challenges in the ERP industries. Two slightly different questionnaires were designed, of which 18 were sent to clothing and textile industries, and 101 were sent to ERP specialists around South Africa. The majority of the respondents were from Gauteng. More than six companies using different ERP system were part of the respondents. The target populations were: directors, managers, supervisors, and also employees. Descriptive statistics, reliability indices, factor analysis, and gap analysis were used to analyse the data. The use of questionnaires was an advantage because while data collection and analysis was time consuming, the data were analysed using SPSS. Majority of the respondents were aware and understood ERP systems and implementation that is why the feedback was remarkable.

To ensure that the model is realistic and usable practically by SME's business managers, though the framework was based on the ERP literature review, and feedback from ERP specialist, it will be tested in SME's companies for practical experience, and that it can be used. Research questions and objectives for the study allowed the researcher to investigate reasons why SME's would show interest in ERP, though there might be limited budget, resources and time. The framework should be very useful for SME's employees who do not have ERP knowledge or expertise. Due to a lack of resources and information for ERP adoption in SME's, this framework should play a big role by giving them an opportunity to implement new systems.

Key words: *Enterprise Resource Planning (ERP), Small Medium Enterprise (SME), Critical Success Factors (CSF), and Clothing & Textile industries*

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Glossary of terms and acronyms

<p>BPR (Business Process Re-engineering), is method of changing organisations in which linked tasks are required to get a specific corporate outcome are redesigned.</p>
<p>Data accuracy: It indicates to whether data kept are the accurate values, and to be accurate, data values should be the correct value and should be characterised in a reliable and unambiguous form.</p>
<p>Communication: Sharing information amongst the task team. This is a process of understanding, and a way of linking individuals. It is also an important role for management, because companies cannot function without proper communication amongst department and workers.</p>
<p>Change management: This can be defined as a way that gives guidance on how people should plan and support each other for successfully accepting change in order to drive achievement and outcomes in business.</p>
<p>C&T (Clothing and Textile): How the raw material is transformed into finished clothing. It is about designing, manufacturing, and advertising of clothing and footwear and other related textile products.</p>
<p>CSF (Critical Success Factors): Refers to procedures which an organization relies on for its existence. This is very different in each business, and it disclose business's goals and objectives. CSF applies business analytics.</p>
<p>DTI (Department of Trade and Industry): The department of the SA government with accountability for commercial and industrial policy.</p>
<p>ERP (Enterprise Resource Planning): Software that permits businesses to automate and incorporate several of their industry procedures, share mutual database and corporate practices through the enterprise, and deliver information in real time.</p>
<p>ERP Choice: A procedure of choosing a suitable ERP package, and a functioning team is established to classify all of the corporate needs through critical enterprise.</p>
<p>ERP Evolution: ERP systems started to develop in the 1960s when adapted software packages that concentrated on inventory control were presented to manufacturing businesses.</p>
<p>ERP final preparation: This is the stage of finishing of the testing, end user education and training, system organisation and cut over activities.</p>
<p>ERP Implementation: This is a procedure with continuous returns that comprise choosing and organising a key in a business to manage and integrate the significant parts of its business operations.</p>

<p>ERP vendors: They are responsible for development of all ERP packages, because they invest time and energy in researching and developing, to assist in creating ERP packaging solutions.</p>
<p>ESAP (Economic Structural Adjustment Programme): These are economic policies that needs to be followed by all countries for them to qualify for new loan from the World Bank and the International Monetary Fund, and also assist in repayment of old debts which are owed to the World Bank, commercial banks and governments .</p>
<p>Implementation stage: This phase covers the determination of the plan choice to the system fitting and cut over. In this period, members of the selected and the development's principles and processes are established</p>
<p>Live run stage: The changes from pre-production background to the live system. Go live and support.</p>
<p>MRP II (Manufacturing Resource Planning): this is the extended MRP with importance placed on incorporation of Engineering, Manufacturing, Marketing, purchasing and financial planning.</p>
<p>MRP (Material Requirements Planning): This is a computer-based information system which transforms master schedule requirements for all end items into time-phased requirements for subassemblies, components, and raw materials.</p>
<p>MFA (Multifibre Arrangement): A global trade agreement on clothing and textile that took place from year 1975-2004. This agreement imposed shares on the amount of Clothing and Textiles which are exported from developing countries to developed countries.</p>
<p>Planning and distribution: It is a method that involves the process of encompassing the delivery of goods, in which quality and quantity, to specific location, in a specified time</p>
<p>Production planning: It is a process which takes place inside a manufacturing company, and it involves making sure that adequate raw materials, staff and other necessary items are procured and the creation of all finished goods according to a specified schedule .</p>
<p>Project Champion: This refers to a person with authority or an expert in a company, who is responsible for completing a given task/ project. This person should be nominated by management to take control or supervise of a specific project, right from the start to the final stage.</p>
<p>Project management: This can be defined as organizing, planning, directing, and controlling of resources to complete the specific aims, goals and objectives of a particular project.</p>
<p>Project preparation: The scheduling phase for the project, where vital planned choices about project objectives, implementation scope, planning, budgeting, implementation arrangement must be made, and the project business and significant teams established.</p>

Raw Materials: Unprocessed materials (inputs or resources), that firms use in manufacturing processes to produce finish goods
Retail: Sales of goods to community in small quantities for the purpose of use rather than for resale.
SHC (Second-hand Clothing): Clothes previously owned by others, before reselling them.
SME (Small and Medium Enterprise): These are independent and non-subsidiary Companies which hire a limited number of employees (50 to 250).
SADC (Southern African Development Community): This is an inter-governmental organization, whose goal is to further socio-economic cooperation and incorporation as well as party-political and security cooperation amongst sixteen southern African states.
Suppliers: Also known as vendors, they supply goods or services which are received by buyers.
Supply chain management: The incorporation of the activities that procure services and material, transform those materials and services into intermediate goods and the final product, and deliver final product to customers.
Top management support: Top Management is responsible for leading and supporting the Enterprise Resource Planning implementation crew.
Trade policy: Rules and agreements that governor imports and exports to foreign countries.
User training and education: This is the most important goal for ERP implementation, and it is used to develop the user awareness of the system and increase the knowledge and understanding of education and educational programme.
Visioning and planning of ERP: Identifies the Critical Success Factors' clear objectives, management expectations, benefits from ERP implementation development, industry vision, suitable ERP implementation plan, and drive behind ERP implementation.
WTO (World Trade Organization): This is the world-wide organization that deals with the rules of trade amongst states.
ZTMA (Zimbabwe Textiles Manufacturers Association): representative body that is recognized in Zimbabwe's textile industry
ZTWU (Zimbabwe Textile Workers' Union): This is an organisational structure, with the gender composition of 55% women and the organization is divided into eight structures, with only one representative form each commission who is from the managing advisory committee.

CHAPTER 1: INTRODUCTION

1.1 Background

Small and Medium Enterprise (SME) cooperatives play an important role in the development of the economy, because they create employment opportunities and also boost economic activity. Due to job creation and employment opportunities that these SME offers, they have a significant place in developing South Africa's economy. For SMEs to adopt new technologies like an Enterprise Resource Planning (ERP) system should reduce cost, reduce time, create better efficiencies in business, and expand business initiatives. There is a need to implement ERP systems in clothing and textile industries, because according to Almuharfi, (2014), ERP systems were introduced with an idea of strengthening both operations of business and also improve productivity which can play a significant role in handling the flow of workloads. Ziamba & Oblak, (2013) argue that businesses are interested in progress of Information Technology (IT) which can handle business workloads, because company operations usually rely on effective technologies to plan and manage systems.

A critical assessment of previous studies will be used to analyse ERP methods published for the past 20 years. In previous years, ERP was only introduced to large industries; nevertheless, there is a need and special considerations of SME in terms of technology. Most of Clothing & Textile (C&T) businesses in South Africa are Small to Medium Enterprises, as characterised by the number of employees and annual turnover of less than R1.5 million, even though they are registered with the Department of Trade and Industry (DTI). Communication amongst higher management, staff, and other shareholders contribute to reduction efficiency and inefficiencies. Adequate training can increase employees' performance by decreasing the period necessary to study and operate new systems. Nevertheless, due to lack of funds and resource considerations, companies are frequently forced to only partly achieve training requirements. Globalization of the marketplace is showing new markets for SMEs to enter the business environment previously dominated by large business. Principles such as scope, total number of staff, and capital requirements differentiate small businesses from big ones. SMEs face difficulties because of numerous resource restrictions postponing their plans and performance competences, yet they still assist with a main role in supporting the effectiveness of larger companies. As a result, they should concentrate on offering quality products with reliable, consistent delivery to their clients to stay abreast of increasing competition.

The study will focus on clothing cooperatives which are based in Gauteng. These started operating in early 2000, and presently have more than 100 employees. Their target markets include manufacturing school uniforms, but they also manufacture clothes such as traditional clothing, suites, wedding gowns, etc. This it can be seen from the Figure 1.1 below



Figure 1.1 Clothing industries in Soweto

During the Information Technology stage, ERP systems were introduced to the C&T businesses in different countries. Some of the ERP vendors with good knowledge of the system decided to establish their own ERP businesses some years ago as a business plan. Nevertheless, as the size of South African C&T cooperatives is usually small or medium, and there was no demand for an ERP software, because it was intended to manage large businesses. The situation in C&T cooperatives needs an adaptation in technology global ERP software businesses which is very expensive for SME (C&T) cooperatives, for example: JD Edwards and SAP. This software is not appropriate to the model of cooperatives for many companies, so there was no need to introduce an ERP system. Their only interest was to manage the manufacturing division and increase production. Introducing an ERP system means that there would be rearrangement of the business as well. The main benefit of ERP is that it delivers a chance to regulate the business process and update the structure, rather than improving output only. The regulation develops the objective of management since it significantly decreases the possibility of backlogs and sets up the basis for further improvement.

Fadelmoula and Abdulaziz (2018), explained that the latest few years have witnessed an increase in ERP system's adoption through corporations in different industries. The fundamental driver of ERP adoption is to gain a range of operational, managerial, organizational, and IT infrastructural benefits promised by ERP systems. However, recent research has found that organizations are adopting ERP system in order to meet some existing challenges regarding data or because of competitive advantages. The system facilitates corporations in finding the best commercial enterprise methods in keeping with standard computerized integration. The system facilitates the appropriate flow of information between parts of the organization (Shah *et al*, 2011). According to Dlodlo (2011), the process on ERP installation requires a range of assets yet the costs are high. However, no matter the high costs associated with ERP implementations, a significant percentage on these implementations do not meet some of the minimum requirements in business in particular in the Small and Medium Enterprise (SME).

ERP systems were introduced in the early 1960s. The improvement by ERP begins with the control of inventory. After the package deal was developed into Material Requirements Planning (MRP), during the 1970s which provided full assistance in scheduling and control. In the 1980s it was developed into Manufacturing Resource Planning (MRP II), so much was aimed at expanding the effectiveness of manufacturing by technologies incorporations, because of information control. The extension of MRP II produced ERP systems (Sowan yet Tahboub, 2015). According to Beheshti (2006), an ERP system is a set of enterprise modules or applications, which connect the business parts of a company such as financial, accounting, manufacturing, and Human Resource (HR); it constitutes the pairing of a compactly built, standalone system with a shared platform of a flow of information throughout the whole business. Ajit *et al* (2014) regard an ERP as a process-oriented Information Technology system which supports an integration of resource planning in the business enterprise in conformity with integrating various systems as an alternative to the existence a standalone application.

Previous research on ERPs mostly emphasizes the adoption stage with little focus on the systems post-implementation. There is a lack of a logical framework to classify procedures for assessing the benefits of ERP post-implementation. The current literature falls short of developing a business case for ERP adoption by manufacturing SMEs. Presently there is a lack of frameworks to determine influences on structural performance. The current literature lacks logical studies on ERP's influence on continuous improvement in SMEs, and there is no indication that successful companies earned any performance-improvements because of excellent management.

1.2 Problem statement

The implementation of an ERP system allows SME to improve their businesses and productivity with the communication and business relationship between ERP vendors, suppliers and other parties. It is very challenging for SME to decide on the adoption and implementation of an ERP system because of the size of the industry and lack or limited resources. Some of the SMEs are not implementing an ERP system because of lack of knowledge, whereas some had heard about the system, but they worry that it might fail. The system has a capacity to integrate business functions, e. g. Human Resource, Supply chain, Finance, Production, Marketing, etc. Lack of information about the appropriate ERP solution for SME needs a comprehensive choice criterion for selection of applications. It is vital for SME managers to experience success of the application processes, clear dedication and understanding of the adoption stages, factors, and implementation. To address these backdrops, the research problem of this study was the development of a novel integrated enterprise resource planning framework for the South African small and medium clothing and textile industries. This will enable the small and medium Clothing and Textile companies to gain competitive advantage within the national and international markets.

1.3 Research Goal

The overall research goal of this study is to develop an integrated ERP framework for South African Clothing and Textile cooperatives.

1.4 Research Objectives

To achieve the research goal of this study as presented in the previous section, the following objectives should be achieved:

- To determine critical success factors linked to ERP system implementation.
- To examine previous ERP frameworks in the literature review.
- To determine what drives companies to introduce ERP system into their companies.
- To examine the efficiency of the current ERP framework implemented by large manufacturing companies.
- To determine how clothing and textile sector view Enterprise Resource Planning decisions to the different institutional and economic contexts within which they operate.
- To determine how several investors in the C&T sector make sense of the need for ERP implementation.
- To classify the drivers and barriers to implement a strategic framework for ERP in SMEs, mainly in C&T business.
- To develop a strategic framework to implement an ERP system successfully in South African Clothing and Textile cooperatives.

1.5 Research Questions

In order to achieve the different objectives of this study as presented above, this study will seek to answer to the following questions:

- What are the critical success factors in ERP implementation?
- What are the flaws of previous ERP frameworks in the current literature review?
- What motivates business organisations to implement ERP in their business activities?
- How efficient is the current ERP framework implemented by large manufacturing companies?
- How does the C&T sector view Enterprise Resource Planning decisions to the different institutional and economic contexts within which they operate?
- How do several investors in C&T sector make sense of the need for ERP implementation?
- What are the drivers and barriers to implement a strategic framework for ERP in SMEs, mainly in C&T business?
- How can a holistic Enterprise Resource Planning Framework can be developed for the Small and Medium South African Clothing and Textile Enterprise?
- How will the implementation of ERP improve at Clothing and Textile Sector?

1.6 Purpose of the research

This research investigates the constraints and factors relating to Enterprise Resource Planning adoption by Small and Medium Enterprise businesses in Gauteng, for the purpose of developing a practical and viable Enterprise Resource Planning adoption model that would eventually be useful to Clothing and Textile Small and Medium Enterprise business managers considering ERP implementation. It is, therefore, believed that developing a comprehensive Enterprise Resource Planning model based on the identified gaps, will allow Clothing and Textile to improve their businesses and productivity with the communication and business relationship between Enterprise Resource Planning vendors, suppliers and other parties. It is very challenging for Small and Medium Enterprise to decide on the adoption and implementation of an Enterprise Resource Planning system because of the size of the industry and lack or limited resources.

1.7 Methods

The study will use mixed methods which will assist with analysing factors of an ERP adoption, this will be based on companies that have already adopted an ERP system. A hundred implementers who are consist of ERP experts from industries (medium and large) will answer questionnaires. Those implementers will be selected from SA, especially in Gauteng. SME cooperatives in C&T sectors will also fill in questionnaires, to identify and find out if there is need for and ERP adoption in their companies. Data collection will be used to develop and test an ERP model.

The advantage of using mixed methods was that respondents were able to use the very same open-ended questions and closed ended questions in one instrument. The use of questionnaires was good because

data collection and analysis was time consuming, even though they were analysed using SPSS. The use of questionnaires was suitable, compared to interviews, because there was no need to put pressure on respondents to instruct them on how to answer. The majority of the respondents were aware and understood ERP system and implementation; that is why the feedback was very interesting.

1.8 Significance of the study

After assessing number of studies, gaps in previous studies have been identified in Clothing and Textile industries. It is believed that the study will improve small, medium, and large cooperatives in the implementation of an Enterprise Resource Planning by giving them knowledge and background skills and understanding of all steps of the implementation.

1.9 Benefits of the study

This report will benefit a range of South African companies which are implementing an Enterprise Resource Planning System.

1.10 Structure

The research consists of the following 10 chapters, list of references and annexures:

Chapter 1. Introduction: Background of the study, problem statement, research question, objective of the study, significant of the study, benefits of the study and research methodology overview.

Chapter 2. Critical analysis of previous studies on Enterprise Resource Planning: The chapter aim at critically appraise previous studies developed with the aim of promoting and encouraging the implementation of Enterprise Resource Planning in manufacturing or service sector. This will aid in identifying the weaknesses of the frameworks identified in the current literature on the implementation of Enterprise Resource Planning.

Chapter 3. ERP Literature review: Discussion of ERP background, evolution, implementation, stages, challenges, reason for failure and Critical Success Factors.

Chapter 4. Clothing and Textile Industries in China: Background of clothing industries, challenges, market size, and employment.

Chapter 5. Clothing and Textile Industries in Zimbabwe: Background of clothing industries, challenges, market size and Zimbabwe employment. Zimbabwe was chosen because it was the best country in SADC that can be used for clothing and textile industries' literature review. There were a number of studies which were published on Zimbabwe clothing and textile industries, and a study by Muradzikwa (2001), indicated a total number of manufacturing in Zimbabwe being the second highest with 139 000 companies. In

SADC, Zimbabwe had a total of 18 200 Clothing and Textile industries, with South Africa being the highest with the total number of 136 824.

Chapter 6. Clothing and Textile Industries in South Africa: Background of clothing industries, challenges, and employment.

Chapter 7. Research methods: The study used mixed method to identify benefits, critical success factors, and challenges in the ERP industries. A total of 119 questionnaires were filled out, out of those 119, 18 were sent to clothing and textile industries, and 101 were sent to ERP specialist around South Africa, where the majority of the respondents were from Gauteng. Descriptive statistics, reliability, factor analysis, and gap analysis were used in the study.

Chapter 8. Data analysis and interpretation: The chapter aims at analysing and discussing the research findings of this study. Four types of company size were targeted such as, Micro enterprise; Small enterprise; Medium enterprise; and large enterprises. 119 respondents participated in the research survey of this study, out of which 101 experts in the field of Enterprise Resource Planning and 18 participants that were not familiar with the tool ERP system (for clothing and textile industries).

Various analyses were conducted, hence the chapter was divided into four main sections. The chapter discuss and analyses the results related to descriptive analysis; analysing the findings associated with reliability analysis; analyse the findings related to factor analysis and gap analysis.

Chapter 9. ERP framework development: The chapter will focus on the development of ERP framework, and critical success factors that will be used in Clothing and Textile industries, to integrate the success of an ERP system. For an actual ERP implementation, the appropriateness of an application is a necessity. According to Aberdeen (2006) the cost of ERP applications has been reduced, and the applications are affordable for SMEs to buy and implement. The implementation of ERP in SMEs might be regarded from the viewpoint of applying the success factors previously recognised for larger companies to a different set of smaller entities, though SMEs are different from their larger business counterparts.

Chapter 10. Recommendation and conclusion: This chapter revealed several plans intended to overcome some barriers and challenges for implementing ERP and issues relating to the use of ERP applications. To implement ERP system in SMEs, the researcher suggested some recommendations, with the expectation that they will be adopted and implemented.

CHAPTER 2: CRITICAL ANALYSIS OF PREVIOUS STUDIES ON ENTREPRISE RESOURCE PLANNING

2.1 Introduction

For any research work, one should make a significant contribution to the body of knowledge of a research field. This will assist to position the ongoing scientific research work in the literature. To this end, the present chapter aim at critically appraise previous studies developed with the aim of promoting and encouraging the implementation of Enterprise Resource Planning in the manufacturing or service sector. This will aid in identifying the weaknesses of the frameworks existing in the current literature on the implementation of Enterprise Resource Planning. Therefore, the chapter start by giving an overview of a number of articles published over the last two decades regardless of the subject areas or journals where they were published. Secondly, the chapter presents the number of studies on Enterprise Resource Planning published per subject area from 1997-2017. Thirdly, the chapter presents the amount of works on Enterprise Resource Planning published by publication type (journal article or conference paper) over the past two decades. Lastly, the chapter critically analyses the best journal articles published from 1997-2017. Only the best journal article per year will be critically assessed in order to identify the gaps in the current literature. The analysis will take into account the size of company used as a case study. This include both Small and Medium Enterprises as well as large firms, the research methodology used (Qualitative or Quantitative), and the country in which the study was conducted.

2.2 Descriptive analysis

This sub-section aims at presenting the number of studies published over the past two decades, from 1997-2017. The reason is to give the reader a clear background on the trend of ERP studies from various scholars and industrial experts.

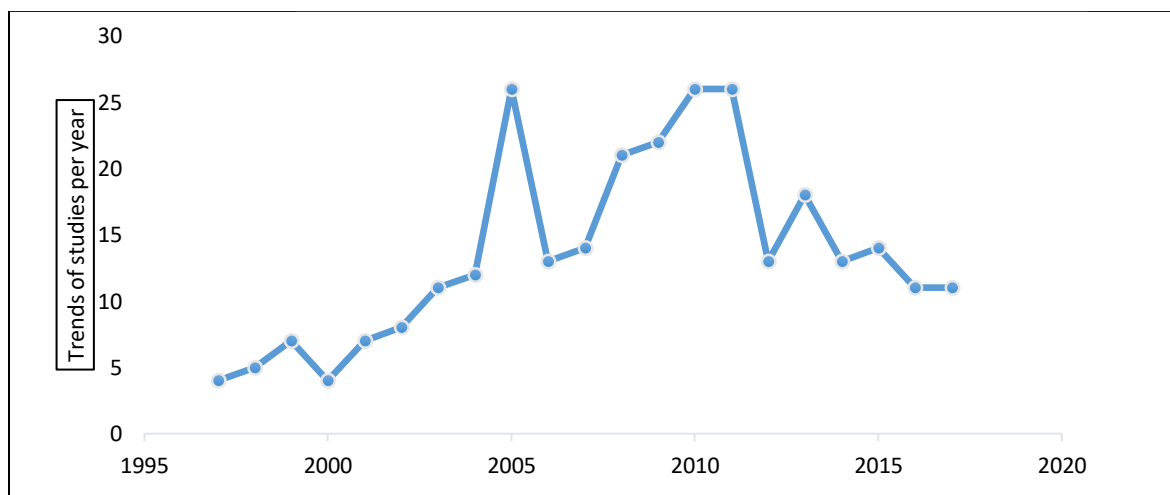


Figure. 2.1: Trend of articles published over the last two decades

From the Figure 2.1 above, it can be discerned that the trend of ERP studies conducted over the past two decades (1997-2017). This shows that ERP has gained great attention from different scholars as well as industrial experts. For example, in 1997 only seven research articles were published, however, this number has changed after a decade with the publication of research articles on ERP amounting to 14 papers. This means an increase of 50% of papers published over 1997-2007. It can also be observed that the number of studies conducted on ERP field between 2007 -2017 has decreased when comparing to the first decade cover the year 1997-2007. Thus, from this backdrop on the studies covering ERP field, our study will seek to investigate the implementation of ERP in Small and Medium Clothing and Textile Enterprises, with South Africa is selected as the chief case study. The reason is because, Clothing and Textile industry has got the potential to boost the current South African economic crisis.

2.3 Distribution of studies per subject area

This sub-section aims at presenting distribution of previous studies found in the current literature on various subject areas over the past two decades, from 1997-2017. The reason is to give the reader a clear background on the trend of interest on ERP studies from various scholars.

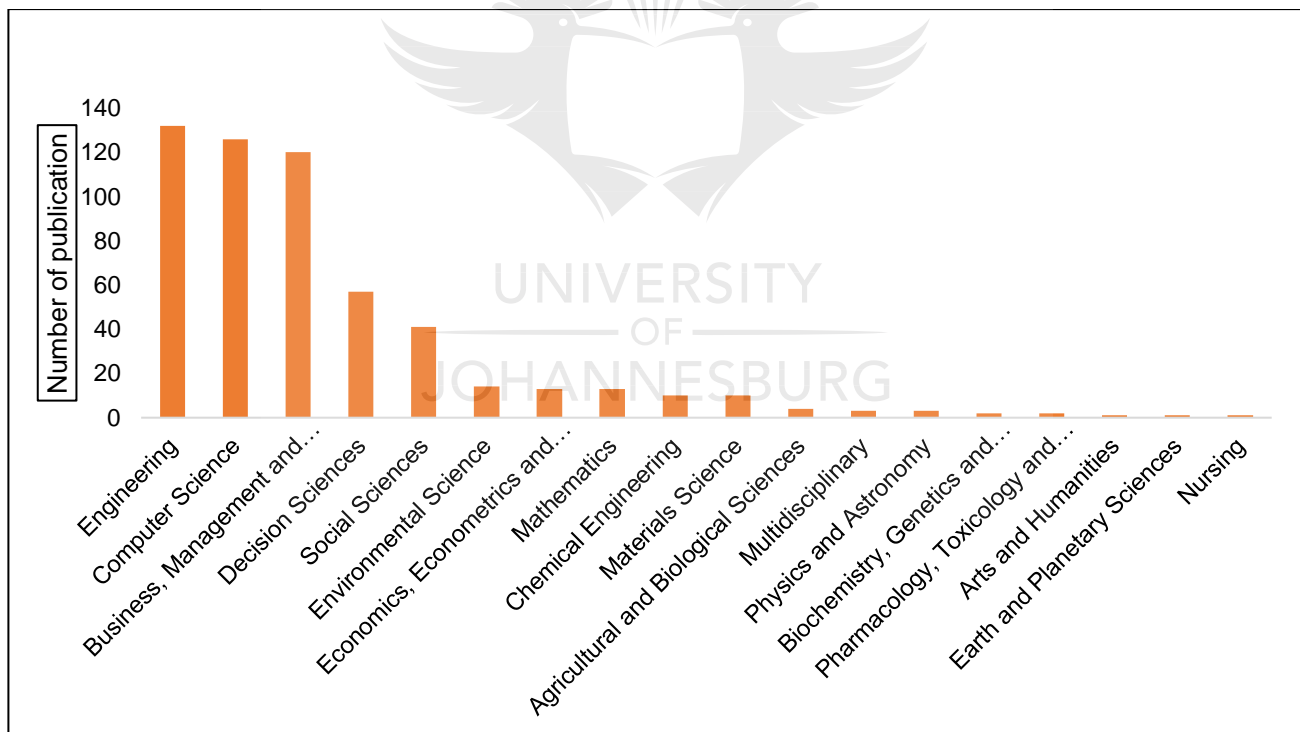


Figure 2.2: Distribution of studies per subject area

Figure 2.2 illustrates the grouping of papers by business with the total number of 286 for the past 20 years (1997-2017). Papers are categorized into different business, grouping by business is significant because activities and organizations are not the same amongst businesses. The highest number of publications is in Engineering (132), Computer science (126), and Business management and accounting (120), and lowest numbers are in Arts and Humanities, Earth and Planetary sciences; and Nursing with one each.

2.4 Analysis of studies per type of publication

This sub-section aims at presenting distribution of previous studies found in the current literature on various subject areas over the past two decades, from 1997-2017. The reason is to give the reader a clear background on the trend of interest on ERP studies from various scholars and industrial experts.

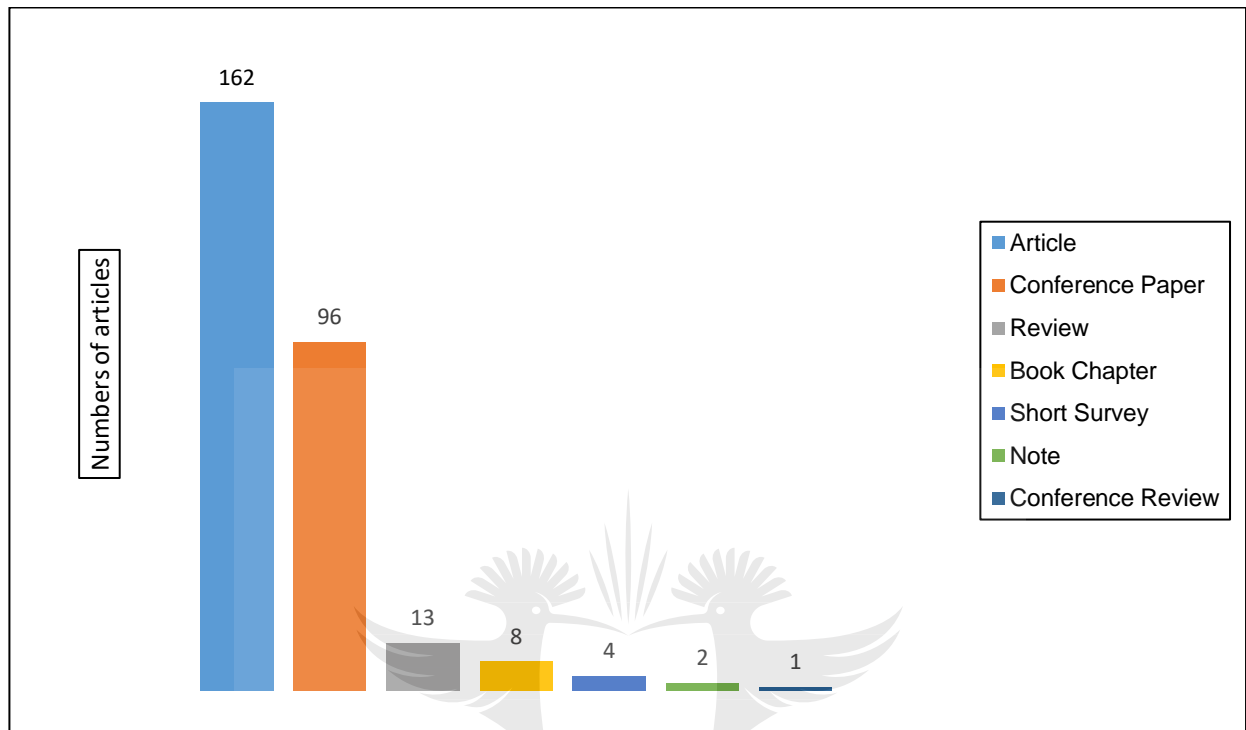


Figure. 2.3: Publications per document type

Figure 2.3 illustrates the total number of papers by document type, where more articles are published. It is worth noticing that the highest number is in articles with a total of 162. The top two constitute 90% whereas 28 additional papers are published in different reviews, 8 book chapters, 4 short surveys, 2 notes, and 1 conference review. Therefore, 286 papers comprised a sample are available in six different document type. This demonstrates the total publication in the past 20 years (1997 to 2017).

2.5 Categorization and clustering of literature review in ERP

Table 2.1: Categorization and clustering of literature review in ERP.



Author and Year	Cluster	Application Area		Company Size		Location
		C&T	Manufacturing	SME	LARGE	
<i>Sun et al (2015)</i>	Computer in industry		x		x	China
<i>Beheshti et al. (2014)</i>	Competitiveness Review		X		x	USA
<i>Moalagh (2013)</i>	International Journal of production research		x		x	Iran
<i>Staeher et al (2012)</i>	Journal of the Association for Information System		x		x	Australia
<i>Lee et al (2011)</i>	International Journal advanced manufacturing technology		x		x	London
<i>Lee et al (2010)</i>	Industrial Management and Data Systems		x	X		South Korea
<i>Esteves (2009)</i>	Journal of Enterprise Information Management		x	X		Spain
<i>Helo (2008)</i>	Industrial Management and Data Systems		x	X		Thailand
<i>Woo (2007)</i>	Journal of Manufacturing Technology Management		x		x	China
<i>Botta-Genoulaz (2006)</i>	International Journal of Production Economics		Service		x	France
<i>Zhang et al (2005)</i>	International Journal of Production Economics		x		x	China
<i>Yen et al (2004)</i>	International Journal of Production Economics		x		x	USA and Taiwan
<i>Mabert et al (2003)</i>	European Journal of Operational Research		x		x	USA
<i>Mandal et al (2002)</i>	International Journal of Production Economics		x		x	Australia, New Zealand, North America, Asia, and United Kingdom
<i>Chen (2001)</i>	Business Process Management Journal		x		x	Australia
<i>Parr et al (2000)</i>	Proceedings of the 3 rd Hawaii International Conference on System Sciences		Manufacturing and service		x	Australia

Sun *et al* (2015) observed that ERP implementation is a difficult procedure, and the failure rate is high. The literature has laid out over 80 Critical Success Factors for ERP implementation, but businesses do not necessarily know how to exploit them. Hence, the authors used a step-by-step valuation and development process for ERP implementation in three corporations. First, a five stage ERP implementation model was suggested. Second, around 80 Critical Success Factors from the literature were explained into Key Performance Indicators, which are related with each ERP implementation stage by 10 local ERP specialists. Third, the weights of the KPIs were planned by means of the Dumpster–Shafer technique and the assessment of 10 specialists. Throughout the implementation procedure, the authors measured the performance of ERP at every phase and corrective activities were recognised if that performance is below the expected level. An implementation flowchart was established based on a five phase model and the philosophy of continuous improvement. Nevertheless, the authors have made significant contribution to the body of knowledge on ERP implementation. But they didn't look at ERPs within SMEs, particularly in C&T industry. Against this backdrop, a study will seek to develop a holistic framework that will incorporate the SMEs sector.

Beheshti *et al* (2014), conducted a study that aimed at examining the key elements that contribute to successful ERP implementation systems in United States manufacturing companies. The study reveals some informative insights into exactly how manufacturing companies use ERP systems in USA. Three firms had implemented ERP systems for more than eight years, each using various types of software. The remaining firms had been using ERP software between six and eight years, with each respondent in this period group also using different ERP vendors. When examining the studies for finding the chosen ERP software brand name, it became obvious that no single ERP vendor leads the field with the manufacturing companies in Virginia. However, the study does not incorporate the challenges faced by SMEs in ERP implementation.

Moalagh *et al* (2013) suggests a practical framework for evaluating a company's ERP post-implementation success using recent models over an uncertain logical network procedure. The concept of ERP success is break down into three main parts, including managerial success, organisational success, and individual achievement. The authors argued that using this framework, the company's ERP system success can be determined, and the compulsory improvement projects can be planned to promote the success level. The proposed framework has been applied the Iran turbine manufacturing firm, to measure the firm's ERP post implementation success. However, despite the fact that the proposed framework was

successfully tested in manufacturing firms, but the study does not consider the issues related to SMEs industries.

Staehr *et al* (2012) examined the post-implementation periods in four manufacturing companies in Australia. The reason for this study was since the authors found that there is still not an adequate understanding regarding the issues affecting ERP implementation within manufacturing firms. In their study, they have identified nine themes that explain “how” and “why” and form the components of a framework for understanding the achievement of business benefits in the post-implementation period. Additionally, they have identified new themes and the underlying relationships between them that explain and increase our understanding of how and why organizations have or have not achieved business benefits from ERP systems. Nevertheless, the authors have made significant contribution to the body of knowledge on ERP implementation. Once again the study did not look at our domain.

Lee *et al* (2011) argued that ERP system implementation in a worldwide manufacturing context, and the product data management incorporation is one of the vital solutions to success. Hence Lee *et al* (2011), in their study recommended digital manufacturing as the main tool of data incorporation between Product Data Management and ERP. Digital manufacturing, as a technology possessing the physical and rational computer demonstrating and simulation technique for real manufacturing, delivers the methodology for converting Engineering Bill Of Materials to the Manufacturing Bill Of Materials (MBOM) that suits the particularities of each manufacturing location, based on the procedure and resource models which reveal the particularities of each manufacturing location. It also delivers the methodology for MBOM confirmation and the procedure and resource model incorporation. By means of such process, the MBOM and the process and resource data, confirmed and suitable for each manufacturing location, can be directed to the ERP system. As with above studies, the framework developed in this study is not comprehensive since it does not cover the issues related to SMEs industry, particularly C&T industry. Therefore, this research will develop an integrated framework that will aim at addressing these omissions.

Lee *et al* (2010) developed a model to investigate the influence of structural support on Behavioural Intention concerning ERP implementation based on the Technology Acceptance Model. The results of the study show that the structural support is a significant influence for perceived usefulness (PU) and perceived ease of use (PEOU). PU and PEOU appear to lead to an advanced level of interest in the ERP system and Behavioural Intention to use the system. The most pertinent conclusion of the study is that structural support is definitely related to acceptance of Technology Acceptance Model. The survey data used in research

are collected from SME firms in South Korea. Notwithstanding, the authors have made significant contribution to the body of knowledge on ERP implementation. But, the results of this study are not conclusive because the authors did not look at the issues blocking a successful implementation of ERP within SMEs in the C&T industry.

Esteves (2009) conducted an empirical study that aimed at outlining the benefits of ERP implementation in Spain. He argued that the ERP benefits requires a long-term orientation is compulsory in order to find a successful understanding of the possible benefits that ERP might bring. Therefore, this study proposes that ERP benefits understanding measurements are consistent, and that supervisors must observe ERP long-term benefits understanding the ERP post-implementation. Moreover, new ERP updates and maintenance projects should consider the results of ERP benefits, understanding auditing to evaluate ERP configuration, rectify possible errors, and increase the effectiveness of several anticipated ERP benefits. Though the study emphasizes the issues that impact ERP benefits understanding, it fails to distinguish between several issues that might impact the understanding of these benefits, such as size and type of firm, ERP systems implemented, and the structural context. Furthermore, the authors failed to look at the issues possibly preventing a successful implementation of ERP in SMEs C&T industry.

Helo (2008) conducted a study that aimed at examining the ERP implementation from the consultants' and software vendors' opinion. The findings of this study are linked to current literature on ERP systems. The consultants' views display the same outcomes with studies conducted with firms using ERP systems. The implementers' opinion shows obvious challenges of using consistent ERP packages for numerous requirements on different levels. Though the sales performances tend to highlight the overall drive and flexibility of software packages, the problems concerning customization and ordinary system remains. The implementers' opinion highlights challenges in operations: production planning, materials management, sales and marketing. The results of the review triangulate and explain numerous features found in the preceding study. From the consultants' opinion growth in production planning and difficult products are particularly required. Notwithstanding, the authors have made significant contribution to the body of knowledge on ERP implementation in the SMEs manufacturing industry. But they failed to look at the issues preventing a successful implementation of ERP within C&T SME's industry. From this background, our study will seek to develop a holistic framework that will incorporate the SMEs sector.

Woo (2007) developed a study focusing on assessing the ERP implementation knowledge of managing a Chinese company. The objective was to deliver Chinese enterprises implementing ERP with understanding about ERP implementation CSF. Building of a case study of the firm using semi-structured interviews of the leaders involved in the ERP implementation procedure as well as checking up of firm documents supported by literature. The main findings of the study are that the CSF for the case firm for implementing ERP is related to its Western counterparts. This study found that when an effort is made to adapt the implementation to the Chinese culture, organisation and style of the firm, implementation is successful. As with above studies, the framework developed in this study is not completely applicable since it does not cover the issues related to SMEs industry, particularly the C&T industry. Therefore, the current research will develop an integrated framework that will aim at addressing these oversights.

Botta-Genoulaz (2006), conducted a study that aimed developing an understanding into how services approach ERP implementation. Evaluation of ERP developments, particularly in services, completed by six case studies were undertaken. We classify and discuss several features of services, which are biased towards manufacturing. Key characteristics classified deal with comprehensive or incomplete incorporation, product or client orientation, the importance of labour, human factor. In conclusion, trends in standardization and integration seen in the industrial sector are also developing in services, but in different ways. As with above studies, the framework developed in this study is not wholly appropriate to our study since it does not cover the issues related to SMEs industry, particularly C&T industry. Zhang *et al* (2005) conducted research on a framework of ERP systems implementation success in China which was an empirical study. Moreover, they stated that ERP system is one of the best extensively acknowledged adoptions to attain competitive advantage for manufacturing firms. Furthermore, Zhang *et al* (2005) claimed that the successful implementation rate of ERP is very low, and several companies did not attain anticipated goals in China. This study improves a framework by changing ERP implementation success. However, the issue with this particular study is that it does not incorporate the challenges faced by SMEs when it comes to ERP implementation.

Yen *et al* (2004) argued that businesses across the world have made considerable investments in installing ERP systems. In the time under consideration, implementing ERP systems has proven capriciously tough, and the final benefits have been undefined. Numerous researchers have decided that the failures are typically the outcome of company difficulties instead of technical problems. ERP systems affect a company's strategy, establishment, and philosophy. The previous study has recognized the necessity for

scheduling an ERP implementation at the strategic level but proposed no exact strategies. Using qualitative research at five US and Taiwanese manufacturing companies, this study examined the relationship amongst ERP implementation practices and a company's competitive strategy. The findings confirm the study proposal, that ERP implementation must be associated with a competitive strategy. Exact guidelines are recommended for designing the strategy. Moreover, two additional recognised variables, nation-wide culture and government/business rules, as being vital to ERP implementation in multi-national settings. Managerial responses to the results and upcoming study matters are discussed. Once again, this study is not pertinent to our domain.

Mabert *et al* (2003) observed that various business organisations across the globe have been introducing ERP system into their business activities. However, the authors have argued that ERP has been successfully implemented in only a few companies whilst the majority of companies are struggling to implement it, especially SMEs. From this drift, Mabert *et al* (2003) conducted a study that aimed at examining and identifying significant differences within the methods employed by businesses that monitored their implementations on a basis of relationship between time and budget. This is compared to the ones that failed to make use of information gathered by means of qualitative research methods concerning manufacturing firms in United States. The results obtained by Mabert *et al* (2003) showed that several diverse elements working from pre-implementation scheduling to system configuration impact implementation which supervisors would have to consider when implementing main systems like ERP. However, the authors have made significant contribution to the body of knowledge on ERP implementation. But they were not concerned with issues preventing a successful implementation of ERP within SMEs, particularly C&T industry. From this backdrop, in our study will seek to develop a holistic framework that will incorporate the SMEs sector.

Mandal *et al* (2002), stated that an organizational competitiveness relies on the efficiency of data flow and consequently the material flow. Data systems particularly computer-based ones significantly contribute to the actual communication in a company whether it be manufacturing or services. In light of this statement, Mandal *et al* (2003), conducted a study that aimed at assessing the requirements of ERP system at different locations, conformation of SAP R/3 to meet those requirements, problems in implementing the system, and the benefits of doing so. However, the ERP framework developed in this study is not relevant since it does not address the issues related to the implementation of ERP within SMEs. Hence, our study will seek to address this by developing a holistic ERP framework.

Parr *et al* (2000) argued that there is evidence that shows that most ERP implementations exceed their budget and their time allocations. They went on to observe that most of studies that were conducted previously aimed at assessing ERP implementation with the goal of providing an ERP framework focusing on maximising organisational efficiencies. In pursuit of this, Parr *et al* (2000), conducted a study that aimed at presenting a taxonomy of ERP implementation categories in manufacturing and service sectors. They developed the taxonomy out of a variety of past studies and by means of qualitative research methods. They further claim that understanding the variations amongst these groups is vital if researchers are to do case study investigations of the implementation of ERP, otherwise judgements are being made concerning ERP implementation projects which are fundamentally lopsided. Decisions based on unequal cases are integrally not valid. The classification of implementation groups is also offered as a tool for implementation supervisors to define the possibility of an ERP implementation plan. This is prior to an analysis of the complexity requirements of the project procedures. However, the framework developed in this study is not pertinent to the current study.

2.5 ERP Frameworks

Yang *et al* (2010) Developed the hypotheses and research model as illustrated in figure 2.4 The goal of the research was to examine the impact of ERP benefits on Supply Chain Management competency. The purpose of the study was to suggest and test a model of the relationship amongst the benefits to Impacts on SCM competencies, and Taiwanese IT industries of their adoption of ERP system .The model focused on two arears, namely: The benefits of ERP and the Supply Chain Management competencies. The developed model consists of five benefits of an ERP system, which are Information Technology infrastructure, managerial, operational, organizational, and strategic. The model also constructs of competencies of Supply Chain Management which include behavioural processes, planning and control, and operational.

The purpose of the model was to examine the relationship between Supply Chain Management competencies and ERP adoption benefits. For a study to examine, what groups of ERP benefits can forecast the competency of SCM, the research hypothesis and the model were used. The study underlines the significant role that an ERP system plays in the operation of supply chain organisations. The managerial, operational and strategic benefits are important predictors for the Supply Chain Management.

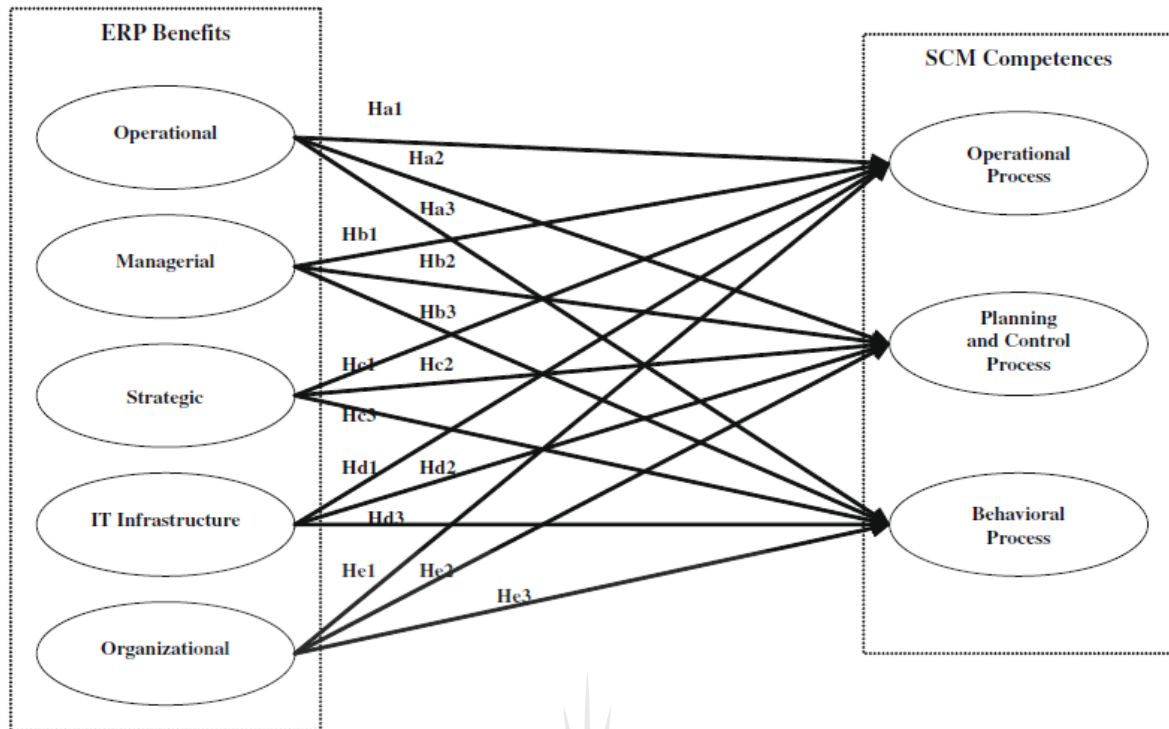


Fig 2.4: the proposed conceptual model and research hypotheses, Yang et al (2010)

Alizai (2014) proposed a model to investigate ERP implementation issues in relation to their applicability in mid-size Enterprises. His study focused on procedures that helps the implementation to takes place. The process can be useful to link different factors effecting ERP implementation in different stages; hence, a staged adoption model is developed to address midsize business issues. This is done by critically evaluating the strategic issues related to it. This model is developed by identifying the three main strategies that impact ERP implementation, namely: organisational, technical and people strategies. It also adopts an integrated approach of classifying ERP CSF implementation along with the processes crucial to every stage of implementation.

There has been research conducted that relates to ERP implementation in large business. These are used to identify some of the ERP implementation challenges faced by midsize businesses, however, there are factors that are also introduced which relate to midsize businesses since they are different from large size businesses. Midsize businesses are fragile, economically relative to their operability. The model will assist managers to use the findings as a checklist before and after completion of ERP implementation stages. The findings will also help businesses to mitigate the risks and challenges related to ERP implementation failures and further limit resistance by applying relevant techniques for a successful ERP project delivery.

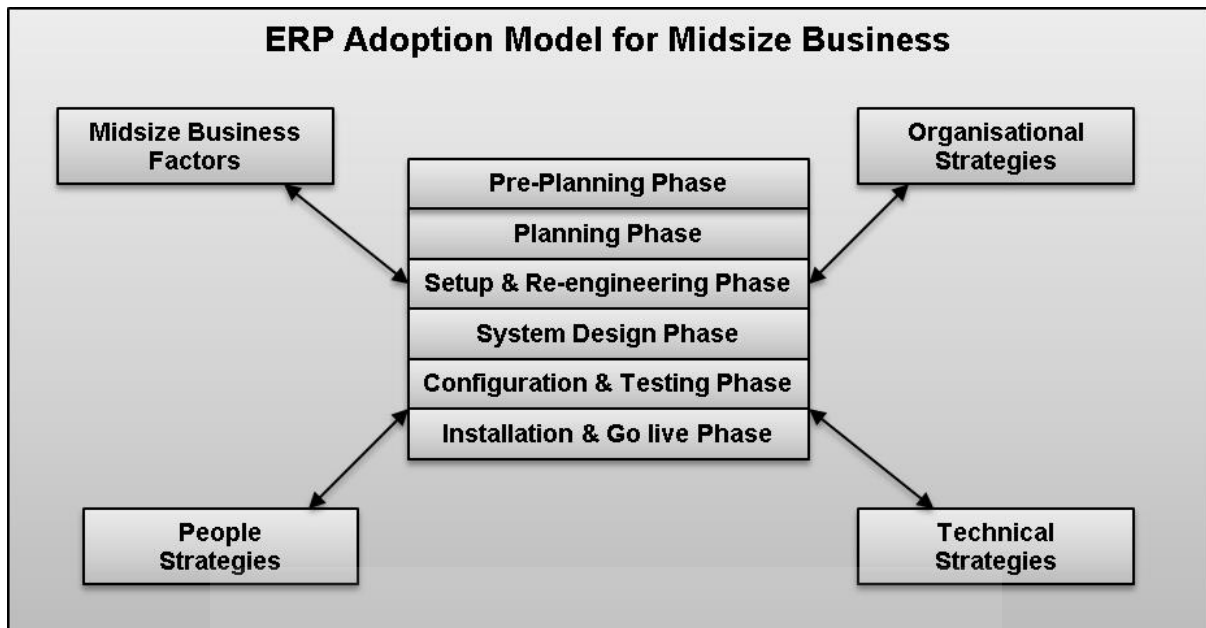


Figure 2.5: ERP Adoption model for midsize businesses, Alizai (2014)

2.6 Conclusion

The objective of the critical assessment chapter is to analyse ERP methods published for the past 20 years. The results therefore contribute to a good understanding of ERP methods applied in industries, especially in manufacturing, both in theory and in practice. Section B was a categorization and clustering of literature review in terms of ERP identify, author, year, cluster, application area, company size and location. The study revealed that there is a need for the research because there is a gap concerning the current research. All best cited papers failed to cover ERP in clothing and textile industries, where only three authors covered SMEs, whereas most of them covered large industries, so there is a need to cover SME's. All authors failed to cover ERP in Africa, especially South Africa, so this is an important gap that needs to be filled.

CHAPTER 3: ERP LITERATURE REVIEW

ERP is considered as a vital component for initiatives pursuing Joint Supply Chain Management systems. These lengthy ERP systems integrate inter-company and world-wide co-operative processes across the entire company processes. This is in addition to inter-subdivision or place integration in a single company (Yu 2005). According to Beheshti (2006) the objective of ERP and ERP 2 is to increase industry's efficiency by increasing its ability to detect accurate and appropriate information for decision making. Regardless of the size of the business and its main business, there is always a necessity to merge industry processes. Behest *et al* (2014) argue that to improve the efficiency and productivity of ERP systems in the development stage, the firm has a necessity to examine the effects that influence user gratification. ERP cannot be used only in manufacturing firms, however. In any firm that needs to improve effectiveness by greater efficiency by means of all assets as well as information, ERP helps. In previous years, the ERP market experienced major adjustment with prominent consolidation amongst role players. Three of the five leading ERP vendors in 2000 (JD Edwards, People soft, and Baan) no longer exist as independent firms by 2007 (Malie *et al* 2008).

Grubisic (2014), discussed an ERP system as an enterprise-wide package which is planned to offer IS incorporated support for numerous business purposes. Ownership of the project is one of the major features that an industry should have when implementing the system. Meanwhile most modifications take place and its comprehensive results impact everyone in the business. It is important to be confident that everyone is on board and will assist in making the current ERP system their own achievement (Kambarami, *et al*, 2012).

The risk involved in ERP implementation has brought to the fore the need for careful planning within businesses. The high price of implementation can mean that typically large corporations may fail. According to Dlodlo (2011), though SMEs have to put into practice the recent ERP methods despite their leaner budgets. The risk involved can entail that fewer SMEs take part in the process of ERP; also, those who had implemented the planning process may not be effectively using the full model. Therefore, there is need to increase a cost effective framework for the implementation of an ERP. These should not only meet the necessities of SMEs, but also take into consideration the dynamic environment of the typical SME. Shah *et al* (2011), claim that ERP implementation normally requires structural work processes to be changed to adopt business practices which are inherent in ERP system. Then it increases the work processes, and decreases the costs in the workplace.

Panayiotou *et al* (2014) debate whether ERP implementation might offer an advantage to businesses and might well lead those business to working through excellence, though naturally there are risks involved.

ERP tasks are difficult goals which impact major internal and external processes of businesses. The achievement of the plan directly impacts the performance and the existence of the business. Today's businesses are facing the globalization of markets and fast-moving economies. In order to manage with these situations, the use of technology, as well as communication systems, is virtually compulsory. Specifically, the implementation of ERP systems as consistent systems that incorporate the activities of the whole businesses has become a significant influence on contemporary companies. The need for ERP applications has improved for some reasons, involving competitive force to develop low-cost manufacturers, expectations of revenue development, and the need to re-engineer industries to reply to market challenges (Christian Leyh 2014). Businesses which implemented ERP-systems are gaining from the help of software applications along the supply chain of firms (Stephan *et al* (2009). According to Almgren and Bach (2014), companies are dependent on technology to improve their corporate procedures. An ERP incorporates various subsystems into enormous systems that share one database.

ERP systems are the support of world-wide supply chains, though their achievement and failure define the outcome of the industry (Jamil *et al* 2015). Elmeziane *et al* (2011) explain that ERP incorporates industry information flow, and cash flow in order to improve companies' in-house procedures and corporate processes. Furthermore, it can improve enterprise's excavating ability, speed up the step of advertising, and simplify industry procedures to generate value.

ERP systems contains standard multifunctional, multi-language of software components that can potentially service the whole business. It has the competence to incorporate far flung bases of a business together with supply chain activities. (Basir *et al* 2014). According to Yliopstio (2014), ERP system remains a significant part in the business operation regardless of how big the size of the company is, as it generates the information that can reach each operative subdivision, which achieves numerous benefits such as greater labour effectiveness, precise sales prediction, and prices cut. ERP systems have been through many various growth phase ever since its introduction back in the 1970s until it achieved recognition as a backbone of main businesses, through various subdivisions, in the world. ERP systems assist companies to decrease costs, decrease rework, and increase decision making. It has been proposed that the accomplishment of an ERP application can be assessed against a set

of key performance indicators and CSF. ERP handles the manufacturing, logistics and distribution, inventory, shipping, invoicing, and accounting for the organizations (Mushavhanamadi, 2013). Zhang *et al* (2002) argue that although an official scheme for categorising ERP systems has existed, its definition still varies widely amongst experts. Small firms might claim that a complete ERP system was being implemented, though other large businesses did not even think that their systems have attained Material Requirements Planning or Manufacturing Resource Planning. As an outcome, it is not significant to distinguish the numerous ERP types. Several important global firms have effectively implemented ERP systems. These firms have undergone the predictable benefits of ERP system (Shatat, 2015). Currently, developing countries are embarking on strong initiatives to adopt ERP systems in their businesses, so the influences that affected ERP implementation in established nations might also require to be studied in the framework of emerging countries (Shah, 2011).

3.1 The ERP System

Stevenson (2012) defined ERP as a system that signifies an extended exertion to incorporate consistent record-keeping that will allow information distribution amongst various parts of a business in order to manage the system efficiently. ERP is a complete corporate answer and contains software support components such as: advertising and sales, product plan and improvement, production and inventory plan, distribution, procedure designed and improvement, manufacturing, quality, HR, finance and accounting, and IS. Slack *et al* (2010) defined ERP as an extension lead of corporate systems incorporation through various businesses in the supply network. Render and Heizer (2014) consider ERP as a software that permits businesses to automate and incorporate several of their industry procedures, share mutual database and corporate practices through the enterprise, and deliver information in actual time. It is an IS for classifying and scheduling the enterprise extensive resources required to take, create, despatch, and account for customers' orders (Jones and Robinson, 2012).

There are many ERP vendors in the market; some of them are expensive with special modules, and some of them are more cost effective and focus only on different operations such as accounting or manufacture planning. Regardless of its advantages and coverage, ERP software cannot totally meet the expectations of a given company, mostly due to the fact each company runs its commercial enterprise with unique practices, strategies and goals. According to Newell *et al*. (2003), ERP gives a competitive benefit due to the fact typical information is produced, shared, and managed in an integrated manner. ERP usage ensures

the reduction of costs, development of aid controls, and enhancement of decision quality, or, in other words, leaner, more streamlined commercial enterprise operations.

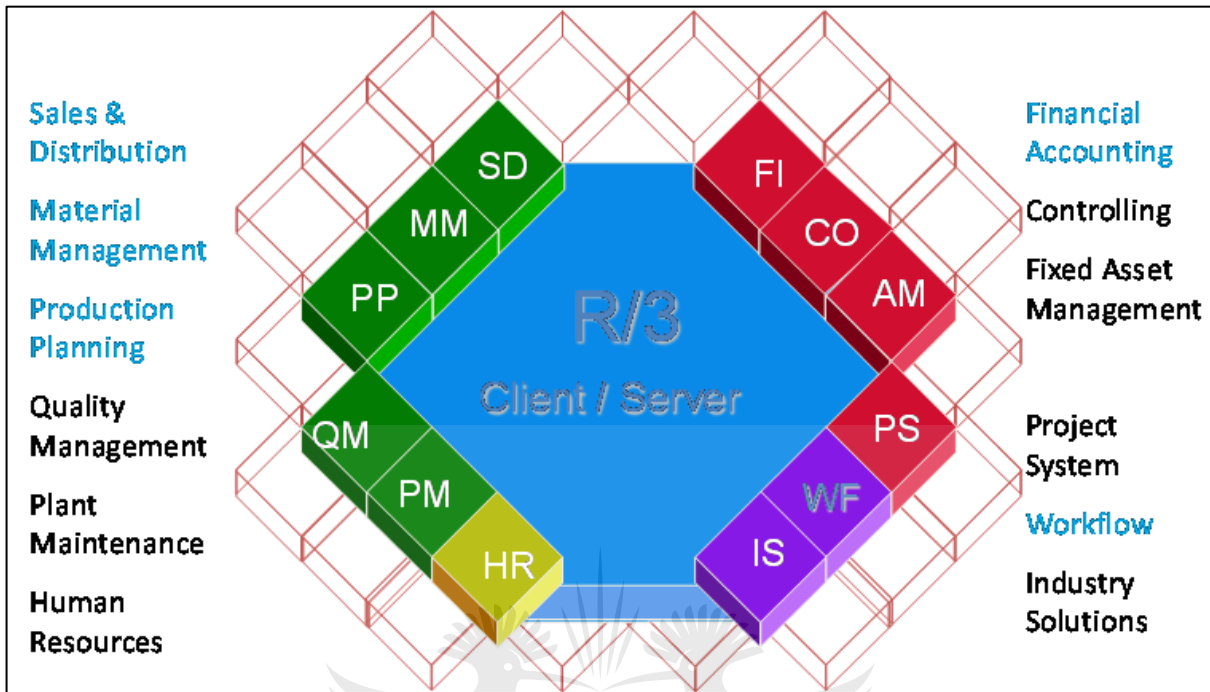


Figure 3.1: Various modules of SAP: Kumar

Figure 3.1 above illustrates various eleven modules of one of the biggest ERP systems, SAP: Planning and distribution, Material management, Production planning, Quality management, Plant management, Human resources, financial accounting, Controlling, Fixed asset management, Project system, Work flow and Industry solution.

3.2 ERP Evolution

ERP systems started to develop in the 1960s when adapted software packages that concentrated on inventory control were presented to manufacturing businesses. Throughout the 1970s, the emphasis moved to emerging IS to schedule and control manufacturing. These systems, well-known as MRP systems, played a significant part in transforming the master production schedule (MPS), constructed for end items, into time-phased net requirements for the sub-assemblies, modules, and raw materials. The 1980s there was a development of MRP systems to MRPII systems. MRPII systems merged MRP outputs with routing information to define capacity requirements and helped as a control to make sure that MRP schedules were achievable. As IS progressed through some operational parts, the necessity to incorporate these systems with MRPII became obvious.

Numerous businesses throughout the world have adopted ERP systems since 1990. An ERP system is actually a difficult system and its operation includes the whole business. This is when computer systems and databases were presented to the corporate world. Generating an IS assists the business to retain its data and use its procedures. Initially, it engaged a good impression to have a computer achieve a procedure much quicker than a human being might do (Morris and Venkatesh, 2010).

In the 2000s, ERP continue to grow, and by integrating technology such as the internet they are currently intended to assist businesses to incorporate unique purposes through their supply chains.

3.3 ERP Implementation

ERP systems were initial implemented in 1980, and since then, reports in implementing and making use an ERP system have been described. In spite of the various failures that have been described regarding the implementation of these system, executives in companies do not have other suitable procedures to replace ERP systems (Morris and Venkatesh, 2010). The aim served by an ERP system is that of arranging, organising and regulating the industry procedures and information. Lately, an important total portion that main businesses embark on is the implementation of incorporated IT such as ERP system to incorporate several corporate functions. These incorporated systems offer unique challenges as divisions may vary considerably (Chung *et al* 2009). ERP plays a significant part in managing the business information flow because of smaller cycles and quicker information operation; that is why it is vital to understand the implementation of ERP as it ensures that supervisors make important strategic choices (Vjesnik 2013).

Before implementation commences, it is important for the business to find out if their approach of running business will be suitable in the ERP system. The most typical reason why firms walk away from million rand ERP tasks is that they realise that the software does not contain some of their significant industry procedures. Implementation is expensive and time consuming, frequently lasting several years, and companies need wide employee and training through the business (Mushavhanamadi and Mbohwa, 2013). At that juncture there are things that they have to do: transform the industry procedure to accommodate the software, which might mean serious modifications in established ways of running a company; shake up significant employees' role and duties, or adapt the software to fit the development (Madinios *et al*, 2012). This might slow down the development or allow viruses into the system, and make the procedure of developing the software to the ERP vendor's needs difficult, because

the customization will require to be re-written to fit with the most recent version (Stevenson, 2012).

Shaul and Tauber (2013), argue that the most vital part of the ERP implementation plans take place early in the selection of the software package itself, and in the arrangement to make this choice. Thus, purchasing a business application means much more than buying software and includes buying into the software vendor's opinion of the most typical practices for several of the business procedures. Education and training is possibly the widely known critical factors, as user understanding is vital. Nonetheless, several industries that have dedicated important business and financial resources to their ERP creativities have come across unforeseen system implementation difficulties (Beatty and Williams, 2006).

3.4 Benefits and Critical factors of an of ERP system

ERP systems play an important part in an industry. Nonetheless, in order to understand this, employees in the businesses should have a general understanding of the main features of ERP to operate well in any business arrangement. ERP capitalise on computer knowledge and enable corporate businesses to have in-depth viewpoints into an extensive variety of businesses' operating activities, allowing them to share information faultlessly among businesses, subdivisions and workers for better administration

Nine critical success factors of an ERP system as discussed by various authors were illustrated on the table below and discussed from 3.5.1 to 3.5.10

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Table 3.1: Critical success factors of an ERP

Critical Success Factors	Level of citation	References
Project management	High	Leah (2014), Stephan A. <i>et al</i> (2009), Curko <i>et al</i> (2012), Nah <i>et al</i> , Shatal (2015), Chauhan <i>et al</i> (2012, Yliopstio (2014), Jamil (2015), Bansal (2013), Basir <i>et al</i> (2014), Guang-hu <i>et al</i> (2006)
Project Champion /Project Sponsor/ Project Manager Role	Medium	Jamil (2015), Yliopstio (2014), Shatal (2015), Nah <i>et al</i> .
Top management support and involvement	High	Leyh (2014), Stephan A. <i>et al</i> (2009), Curko <i>et al</i> (2012); Basir <i>et al</i> (2014); Bansal (2013; Guang-hui <i>et al</i> (2006), Jamil (2015), Yliopstio (2014), Shatal (2015), Nah <i>et al</i> .
User training	High	Leyh (2014), Stephan A. <i>et al</i> (2009), Jamil (2015), Yliopstio (2014), Shatal (2015)
User involvement	Medium	Bansal (2013) , Jamil (2015), Shatal (2015)
Education and training	Medium	Basir <i>et al</i> (2014), Bansal (2013), Guang-hui <i>et al</i> (2006).
Organizational fit of the ERP system	Low	Leyh (2014)
BPR	Medium	Stephan A. <i>et al</i> (2009), Basir <i>et al</i> (2014); Jamil (2015), Yliopstio (2014), Shatal (2015)
Data accuracy	Medium	Stephan A. <i>et al</i> (2009), Guang-hui <i>et al</i> (2006), Yliopstio (2014)
Communication	Medium	Basir <i>et al</i> (2014), Yliopstio (2014), Chauhan <i>et al</i> (2012)
Change management	High	Stephan A. <i>et al</i> (2009), Curko <i>et al</i> (2012), Basir <i>et al</i> (2014); Bansal (2013), Jamil (2015), Yliopstio (2014), Chauhan <i>et al</i> (2012), Umble <i>et al</i> (2003)
Teamwork	Medium	Stephan A. <i>et al</i> (2009, Jamil (2015), Shatal (2015)
Software development	Medium	Stephan A. <i>et al</i> (2009), Bansal (2013) Nah <i>et al</i> .
ERP system tests	Low	Leyh (2014)
Vendor support	Medium	Stephan A. <i>et al</i> (2009), Bansal (2013), Shatal (2015)
Empowered decision makers	Low	Stephan A. <i>et al</i> (2009), Jamil (2015)
ERP consultants/vendor/customer partnership	Medium	Stephan A. <i>et al</i> (2009), Jamil (2015), Yliopstio (2014)
Implementation strategy	Medium	Curko <i>et al</i> (2012, Bansal (2013), Jamil (2015)
Clear goals and objectives	Medium	Basir <i>et al</i> (2014), Shatal (2015)
Visioning and planning	Medium	Yliopstio (2014), Shatal (2015)

3.4.1 Top Management Support

According to Basu & Lederer (2011), there can be low commitment to successfully implementing an ERP system if top management assign the ERP implementation process to lower levels of management. If there is full support and motivation from top management regarding ERP implementation, success is more likely. For a successful ERP implementation, top management should lead the ERP implementation team, and the team must be approved by means of top management.

3.5.2 Team Composition and Teamwork

ERP projects comprise all the operational subdivisions within a business. It needs the collaboration of technical, commercial business specialists and external specialists as much as the participation of end-users inside distinctive project stages. The achievement of ERP projects is associated with the understanding, the skills, the abilities and the involvements about the task team members; external professionals though, should be used as actual consultants.

3.5.3 Cooperation and Communication

Sharing information amongst the task team then, communicating the results and the clear objectives to the rest of the firm within each project is vital. Communication is the difficult task within some ERP implementation development. It must define and describe the details for ERP implementation in the business, and every worker must understand the project, albeit only their role in some depth.

3.5.4 Business Plan and Vision

There must be a business plan on exactly how to attain objectives. Vision and plan identify the CSFs clear objectives, management expectations, benefits from ERP implementation development, industry vision, suitable ERP implementation plan, and drive the ERP implementation itself.

3.5.5 Project Management

ERP implementation is a difficult task as involves a chance of unforeseen events. Hence the management of risk is wanted to reduce the influence on unexpected events by figuring out robust risks before negative events occur. Project Management organises the usage on benefits.

3.5.6 Vendor Support

The ERP implementer-vendor cooperation might be a significant success subject leading high implementation achievement. Each business has its own thoughts on the method of implementing a system. Thoughts of the ERP-vendor will differ with the customer's requirements.

3.5.7 Software Development

The system designers and supervisors have to focus on developing higher systems instead of specialising in user gratification. Quality assurance is vital; it must be established within the initial stages of the application to obviate erroneous results.

3.5.8 User Involvement / Training/Education

Education and training are probably the most extensively recognized influence on ERP projects, which inevitably require participation and devotion to the plan. If there's no learning programme the project may be rejected, and this limits the development of the project. Main users of a business should not only be experts on the firm's procedures, perhaps even be tuned into the data in data systems inside the precise branch. Including users is likely to reduce resistance to a given ERP system. The most important goal for education and educational program for ERP implementation is to develop the user awareness with the system and increase their knowledge and understanding.

3.5.9 Data accuracy

Data accuracy is one of the most significant determinant of ERP success. ERP system components are related to one another, so incorrect data input into one component may adversely affects other components. Umble et al (2003) argue that data accuracy is vital in teaching ERP users, and it should be considered as priority in the implementation of an ERP system. Incorrect data accuracy will have negative results right through the process.

3.5.10 Change Management

For various business the toughest task in impressive ERP is change management. There are excellent change management plans which are essential to affect the attitudes of possible users. The way an individual works needs to change, so change management is vital for creating a business ready for the overview of an ERP. Change management is one of the Critical Success Factors for a profitable ERP implementation. Individuals have to be properly prepared for the impending change through appropriate change management methods. If this training of individuals meets with resistance, disorder will ensue. According to many authors,

change management is observed as the most essential element contributing to the successful of a project, throughout the phases of ERP system adoption.

3.6 Stages of ERP System

Different implementation stages were recognised in the literature review, Ross and Vitale (2001)

3.6.1 Project preparation
Project preparation is the scheduling phase for the project, where vital choices about project objectives, implementation scope, planning, budgeting, implementation arrangement must be made, and the project business and important teams established.

3.6.2 ERP choice

In a beginning a procedure of choosing a suitable ERP package, a functioning team is established to classify all the corporate needs through crucial enterprise and clients. Communication about system functionality, places, product roadmaps, ERP vendors, implementation business partners, and local support abilities are recognised and selected. An evaluation procedure is followed to the selection of possible packages and business partners, followed by a co-operation procedure, in which contractual conditions are worked out, and finally, deliberations are complete and then confirmed by management.

3.6.3 Implementation stage

This phase covers the determination of the planned choice to the system fitting and cut-over. In this period, members are selected and the development's principles and processes are established. Clients' needs are integrated into the descriptions and the industry procedure is reformed to meet the needs. Likewise, system structure, testing, user training and fitting are conducted and accomplished.

3.6.4 Final preparation

Final preparation is the stage of finishing of the testing, end user education and training, system organisation and cut over activities. All open topics should be adjudicated, and the basics for the "go live" should be achieved, before progressing into the next stage.

3.6.5 Live run
Go live and support" indicates the change from pre-production background to the live system. The most significant activities are creating system support, observing the system transactions, and improving general system performance.

3.6.6 Business Process Reengineering (BRP) and ERP Systems
BPR and ERP are not equivalent but can be intended to help one another. The BPR plan is definitely a change

management one, and it is supplementary with ERP managing the way. Enterprise system businesses have created excellent practice through consulting with customers and several of these practices might be used for BPR. ERP systems are formed on good practice for the particular businesses, and to professionally set up ERP, all the methods in the business should conform to the ERP model. Businesses have one way of leading profitable enterprise procedures. Managers should work out whether or not business method reengineering might be approved beforehand, all through, or after, ERP implementation (Huq *et al* 2006). The influence of ERP systems on BPR implementation might be important in terms of configurability. The project team in charge of implementation will be challenged to meet the functionalities of the ERP application by aligning the current processes with the software that may look like a company-wide BPR project. (Zhang *et al*, 2002).

3.7 Reasons for ERP failure. ERP systems are complicated to maintain. Their raison-deter is to intensify industry functions or a procedure leading to development. Problems such as top management commitment, expensive installation, lack of proper communication and lack of education and training lead to ERP projects' failures. If business's risk management plans are in order and appropriate to the risk, then failure rates can be reduced. (Chatzoglou *et al* 2016). Leyh (2014) explained that risk management plans don't always work for businesses as a lot of managers regard risk management procedures as additional work and as incurring needless expenditure. Risk management's priority job is to classify risk influences and related influence level and its specific effects on project stages. Main failures are likely to be due to a poor implementation of the project.

3.8 Conclusion

ERP system, Evolution, ERP implementation, benefits and critical success factors, stages of ERP, and reasons for ERP failure were discussed. To this end the following chapter covered clothing and textile industry in China.

CHAPTER 4: CLOTHING AND TEXTILE INDUSTRIES IN CHINA

4.1 Background

China is in top 10 ranking world producer of Clothing and Textile (C&T) with a population of 1 414 045 928 in 2018. Religions are Buddhist (24,984,513), Christian (70,050,605), Muslim (24,723,743), folk religion (300,805,540), Hindu (13,735,413), Jewish (13,735,413), other: includes Daoist (Taoist (9,614,789 people), unaffiliated (716,988,547), and population by ethnic groups are Han Chinese (1,258,163,811), Zhuang (17,856,037). China is the number one exporter of clothing and textile to the US. The country was also the fourth biggest market for United States distributes of clothing and textiles in 2015, representing 4.4% of the entire distributes. United States clothing and textile distributes to China improved by 27 % between 2009 – 2010, and by 7% between 2012 -2013. At the same period China's textile business is facing deteriorating conditions. Development dropped to 10.8 % and 8.3% in 2012 and 2013, respectively (Top Markets Report Technical Textiles, 2016). As competition in the clothing and textile business continues to rise, China has developed a main manufacturer and distributor of practical textile products. Its market is anticipated to grow rapidly, determined by demand and government assistance. With continuous market development and growth in the demand of practical textiles, chances exist for United States exporters, as there is considerable potential from main practical textile businesses, such as manufacturing and medical textiles. Figures 5.5 and 5.6 illustrates China as the best country in overall technical textile marketing rankings. This is further demonstrated in Appendix 1.

4.2 Introduction

The C&T industry has remained one of China's old-style businesses since 1949 and has continued to be one of the main businesses in China. This business has undergone dramatic transformations and achieved considerable development for a long period. China is the world's major exporter and manufacturer of numerous products in this business (Qiu, 2005). The business has accomplished remarkable development and plays a significant part in the national economy together as a foreign exchange revenue-earner, also as a main basis of employment. According to a Study on China's Textiles and Clothing and Market Expansion Strategy (2005, the international share of China's C&T exports has improved as of 2.6% in 1970 to roughly 17% currently. Agreement to the World Trade Organization (WTO) has supported C&T subdivision as main distributors of C&T, together with the United States (US), the European Union (EU) and Canada, have started to phase out shares on Chinese imports.

Indeed, the sector has demonstrated a burgeoning export. MacDonald *et al* (2004), argue that the growing of China's textile business remained one of the leading influences determining world cotton and textile marketplaces in current years. Meanwhile China's agreement to the World Trade Organization (WTO) in December 2001, China's C & T exports have achieved an additional 40% and China's cotton utilization has developed by 34%. Towards the end of 2003, China had almost doubled over its share of C&T exports in less than a period, to around 21%. C&T exports from China and some developed nations are obliged by quotas initially implemented by established nations according to the Multifibre Arrangement (MFA). Since the 1990s, the rapid growth of China's C&T firms to Cambodia has remained carefully connected to the phenomenon of manufacturing clustering of C&T companies at the Yangtze River Delta, Pearl River Delta and Bohai Rim (Wang *et al*, 2008).

The C&T businesses create a main part of engineering production, work and trade in numerous emerging nations (Jodie Keane and Dirk Willem te Velde, 2008). The business has been a support business in China for a long period. Ever since the open-door rules and economic transformations started in 1979, this business remained a major strength in China's exports. It is a main basis of foreign exchange for the nation and therefore plays a significant part in the country foreign trade and economic growth. Over the past centuries, the national C&T business itself has as well go through a great transformation. Most workshops were situated in numerous big coastline towns for the period of 1980s and early 1990s. However nowadays the inner districts have turned out to be households operating C&T businesses. A lot of plants are fitted out with up to date technologies and manufacture an extensive variety of products. Most of them are even capable of producing great quality products for distribution. China is now the main exporter of C&T products in the world and responsible for one-tenth of the world's distributers in this business. C&T exports are responsible for 20% of China's entire exports. According to Qiu (2005), the industry is the major business manufacturing in China, and It has about twenty-four thousand enterprises and hires around 8 000 000 employees. The value of its entire production was one thousand and sixty-four billion yuan in 2002. China is the main clothing manufacturer in the whole world and has the major production volume for textile mill products containing of yarn, man-made fibre and silk.

4. 2.1 Market size

According to Beatriz Irun (2017) China has the main textile manufacturing and export business in the world. The business is a main player in the Chinese domestic economy and the global fabric marketplace. For the previous century, although unstable economic situations from 2008-2011, the market stocks of Chinese textiles in garments in the EU, the US and Japan progressively improved. Years later, China's textile business is going through deteriorating conditions. The business has dedicated to increasing simple research and development (R&D) projects and to strengthening practical inventions. As an outcome, the Chinese textile business has undergone rapid development over the past years, rising at a quicker rate compared to the entire business. This business advanced comparatively late in China, though. Firms concentrating on technical textiles are developing due to updating their technology. By means of an important support from administration, most Chinese manufacturers in the business are nowadays looking to manufacture value-added products.

4.2.2 Textile

The textile business has one of the complex industrial chains in the manufacturing business. It is mixed subdivision conquered by SMEs, with a demand mostly driven by 3 leading end-uses: clothing, homebased furnishing and manufacturing use. There are numerous materials that might be used to describe a fabric. Other examples of material properties comprise of heaviness, look, quality, strength, lustre, and flexibility. China's textile business impacts on growing employment and salaries, promoting suburbanisation and social growth. On the other hand, it also spent vast quantities of energy in the previous 30 years of quick growth (Wang *et al*, 2017). The government has vigorously urged the businesses to implement improvement plans, mainly investment in capital equipment such as textile machines.

4.2.3 Clothing

The clothing business, which is work-intensive, has in practical terms completely liberalised, and is one of the most liberalised subdivisions in China. Barriers to admission in the subdivision are slight and the government shows only a minor role in guiding the business. Though a current upsurge of over-investment and unrestricted competition has created severe depression of value, as global purchasers nowadays have a better choice of dealers. This has contributed to additional price discounts. Main textile firms have lately expressed their worries that the hostile rivalry unchecked by the removal of shares will damage the business's profits as companies reduce prices in an effort to stay dominant (Textile Sector, Study on China's

Textiles and Clothing and Market Expansion Strategy, 2005). According to Qiu (2005), ever since the beginning of the economic improvements, China has undergone swift economic development by almost a 10% yearly growth rate. Increasing salaries and improving living standards contribute to a growth in the demand for clothes. Both the internal and external marketplaces have formed great opportunities for the regional clothing business to develop. China has been the main clothing manufacturer through the world since 1994. From 1985 to 2000, the business developed by 15% annually on average. Gentlemen's wear, ladies' wear, tops, coats, and children's wear are the main products in this group. Due to increasing living standards from rapid development, a demand for latest brands of clothing has emerged, as well as denim wear, casual wear and leisurewear.

Irun (2017) discussed that gentlemen's attire is the fastest developing division of China's clothing market, and its share in the general clothing market volume improved with the rise of the middle class. Chinese males are paying more attention to appearance and style and pay more for clothing. The national gentlemen's wear market deals are projected to reach R877.13 billion 2016. The world men's clothing business surpassed R 5 807.48 billion 2015. Ladies' wear division is moving from labour- intensive to knowledge-intensive, through continuing strong market demand. In future, ladies' wear business will experience difficulties from branding and measure and will emphasise the process of brands and value. In the children's wear division, main clothing brands are dynamically scrambling for market share. In the future years, children's wear will develop the quickest rising clothing subdivision in China with the advent of the baby boom. The world children's wear market was about R2 923.65 billion in 2015, generating a 15% growth in 5 years. Wedding attire market in China is taking off, and so it is offering considerable chances for national and non-national businesses in that field.

See overleaf for favourite brands.

Table 4.1: Most popular Brands in China. (Irun, 2017)

Products	Top Brands Abroad	Top Brands Nationally
Menswear	Ermenegildo Zegna, Dunhill, Hugo Boss, Armani, Valentino, Ralph Lauren, Cerruti, Test.	Youngor, Firs, Septwolves, Lilang, Kingboxing, Romon, Seven Brand, Conch, Rouse, Verri, Didiboy, Upper, Artsdon, Sinoer
Womenswear	Dior, Chanel, Prada, Gucci, Celine, Only, Etam, Longchamp, Esprit, Max Mara, Versace, Trussardi, Burberry, Michael Kors, Marc Jacobs, Furla, Fendi, Coach.	White Collar, Fiona Chen, Kaiser, Lily, Girdear, JNBY, Peacebird, Sierli, Gloria, Zuc Zug, Sheme, Hodo, Shanghai Tang
Children's Wear	Mickey's, Les Enphants, Bob Dog, Bossini Kids, Esprit Kids, Zara Kids.	Balabala, Paclantic, Good baby, Wahahakids, Boshiwa, Yaduo, Yeeshow, Shuihaier, M-linge, Hodo.
Casualwear	Jack&Jones, Levi's, Tommy, Wrangler, Tony wear, Uniqlo, Baleno, Jeanswest, U2, Zara, Mango, Giordano, Bossini, H&M, C&A.	Metersbonwe, Tonlion, Boboo, Fairwhale, Exception, Semir, Yishion, Urban Revivo.
Sportswear	Nike, Adidas, Puma, Umbro, Reebok, Converse, Mizuno, Fila, Kappa, New Balance.	Li-Ning, Anta, Peak, 361, Xtep, Adivon, Wanddanu,
Underwear	Triumph, Calvin Klein, Wacoal, Embry Form, Pierre Cardin, Chilier, Audrey, Aubade, Ordifen, Esprit underwear.	Aimer, Sunflora, Gujin, Maniform, Three Gun, Gracewell, Yiselle, AB

4.3 Social aspects of clothing and textile in SME

4.3.1 Employment and Wages

Labour rich nations have a relative benefit in clothing assembly, as they might compete with lower salaries. This is an old economic quarrel; nonetheless, it is occasionally twisted into a communal wrangle that such moderately small salaries are an advantage since they are lesser than salaries paid in advanced nations, head office or main businesses. (Keane and te Velde, 2008).

Figure 4.1 indicates that the employment in the clothing industry experienced a steady rise from 1.8 million in 1980 to 6.2 million in 2008 that is over three times more than previously. Employment grew tremendously in two periods significantly, that is from 1983 to 1994 and from 1998 to 2008, with the quantity dropping slightly in between from 1994 to 1998. The primary boom is related to state policy of reform and opening up, once the combination of worldwide production network created robust demand and subsequently created huge job opportunities for domestic labour. The second steep rise from 1998 was stimulated by China's accession to the WTO, when that openness of China's market attracted an increases in orders and foreign investment from elsewhere round the globe. Accompanied by positive growth when 1998, the steady growth of the employment shows that the clothing industry was not very influenced by Asian financial crisis in the late 90s (Zhang *et al.*, 2015).Figure 4.1 overleaf shows the employment in clothing manufacturing in China, 1980-2008.

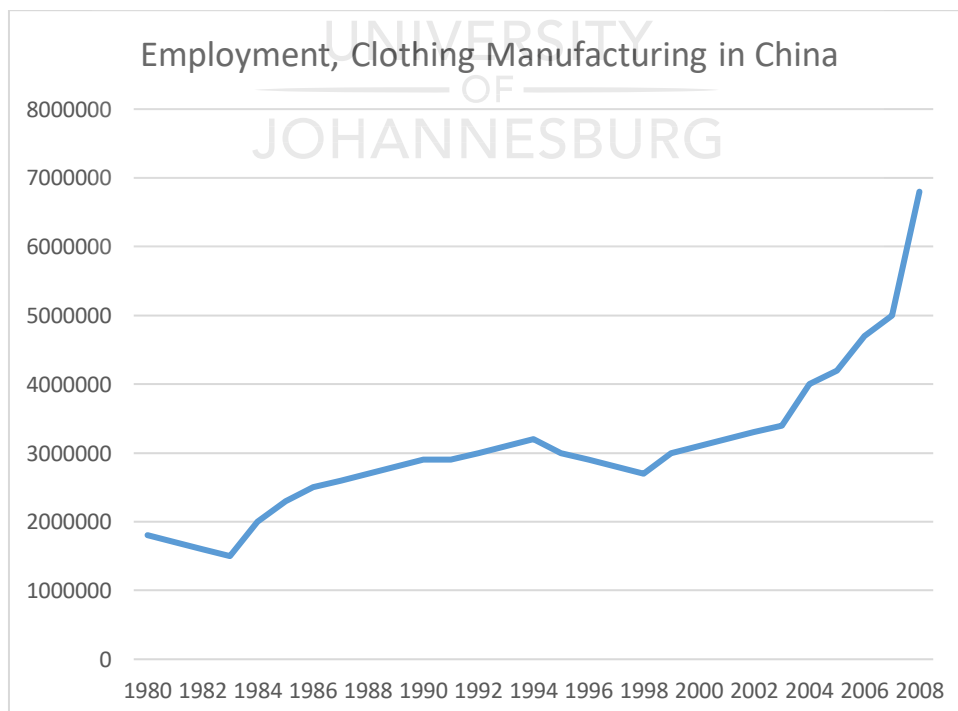


Figure 4.1: Employment of clothing manufacturing in China, 1980-2008 (Zhang *et al.*, 2015)

4.3.2 Employment trends

Figure 4.2 overleaf illustrates the number of people employed in textiles and clothing, according to available data. However, differences exist from other sources, ranging from hundreds of thousands to tens of millions for some of the main textiles and clothing producers, thus demonstrating the need for better employment data.

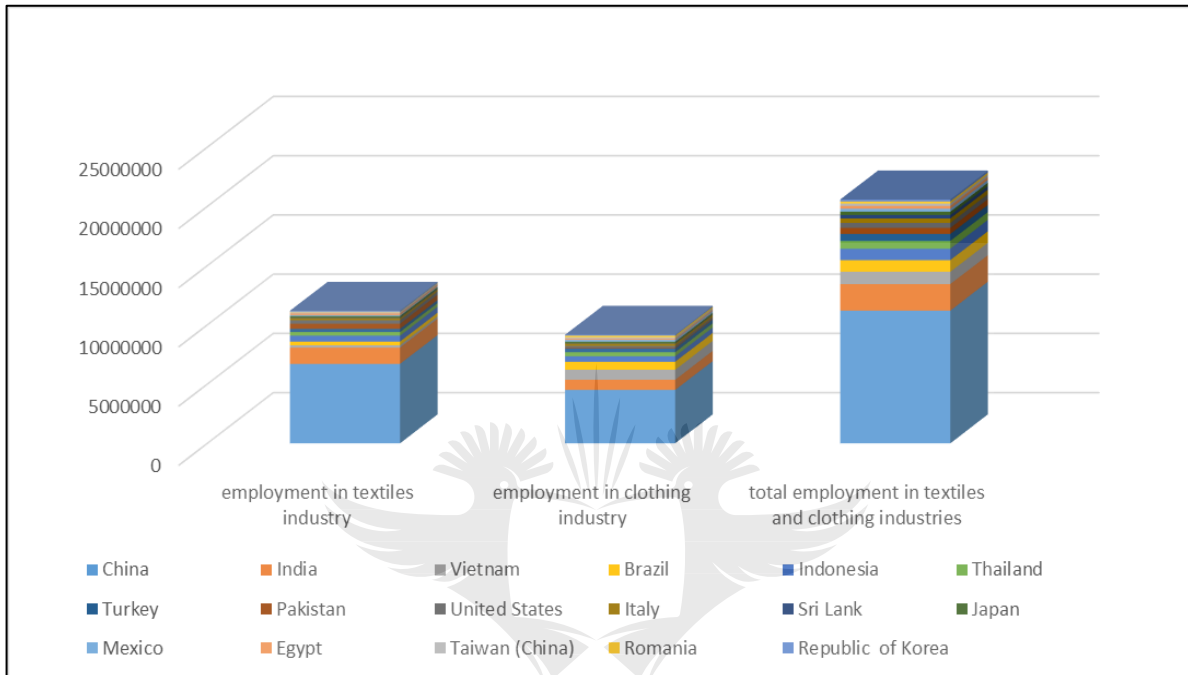


Figure 4.2: Formal employment in the textiles and clothing industries in 2008-2018

Figure 4.2 Indicates the total number of employees in the C&T industry .China has the highest proportion of employment, employment in textile industry is 6700 000 in 2010. The followings are numbers employed in the textile industries: India: 1 379 264 in 2009, Vietnam: 195 551 in 2010 , Brazil: 308 155 in 2010, Indonesia: 498 005 in 2009, Thailand: 311 554 in 2006, Turkey: 265 957 in 2009, Pakistan: 438 657 in 2006 , United States: 290 804 in 2008, Italy 182 177 in 2008-2009, Sri Lanka 35 264 in 2010, Japan 137 772 in 2010; Mexico 83 674 in 2010, Egypt 130 815 in 2010, Taiwan (China) 114 253 in 2006, Romania 27 263 in 2010, and 87 868 for Republic of Korea in 2008. Employment in clothing is 4 501 100 for 2010. The followings are numbers of employed in clothing industries: India: 862 689 in 2009, Vietnam: 844 069 in 2010 , Brazil :671 356 in 2010, Indonesia: 464 777 in 2009, Thailand: 345 835 in 2006, Turkey: 329 584 in 2009, Pakistan: 62 388 in 2006 , United States: 130 340 in 2008, Italy 199 001 in 2008-2009, Sri Lanka 260 308 in 2010, Japan 137 665 in 2010; Mexico 163 118 in 2010, Egypt 103 268 in 2010, Taiwan (China) 87 261 in 2006, Romania 154 547 in 2010, and 76 701 for Republic of Korea in 2008.

4.4 Labour, health and environmental standards

Important labour standards describe the conditions of service, compensation from service, and working conditions. Other specialists claim that businesses providing the main purchasers of clothes are observing adequate labour standards, typically distinct from the purchaser firm. One such standard is connected to the conception of salary. Some economists propose that companies pay their employees an hourly salary that is equivalent to the minimal endorsed by law. Nevertheless, some activists maintain that this is not the proper foundation for a lowest payment, which instead must be based on a living salary (Keane and Dirk Willem te Velde, 2008).

4.5 Gender

Nordas (2004) discussed that the C & T sector contributes meaningfully to the empowerment of females. Job establishment in the division has been mainly robust for females in impoverished nations who formerly had no working opportunities other than in domestic or the casual sectors. Employment in international manufacturing is not intrinsically bad for females, as employed in C&T distributes more goods than being employed in the national economy, or being jobless. There are notable differences in the relation of man to woman hire in the C&T businesses through nations and districts. This is due to the demands of textile manufacturing being better than that of clothing manufacturing, and the exact nature of man and woman relations and their designated role in the public sphere. Females working in the textile business have a comparatively high qualification, but in most circumstances not as high as males. As a result, males occupy skilled positions whereas females are absorbed in minor employment positions. Even after controlling for talent, male employees still receive 30% more pay, while nearly half of the woman employees are working on short-term contracts or subcontracted, while most males occupy full time positions. As a result, females don't get extra social benefits to which they must be entitled to.

4.6 The influence of trade and other policies

4.6.1 Trade policy

The international economic prospect suggests that the clothing division still delivers a chance for export change and the growth of manufactured exports for low salary nations, even in the face of rivalry from China. The countries most capable of enlarging their exports of clothing will be those that have a supportive corporate background, low trade prices, and modest companies that are flexible enough to counter the trading demands of the international purchasers that currently control the business (Study on China's Textiles and Clothing and Market Expansion Strategy,2005).

4.7 Raw Materials Input

China has a competitive national supply of raw materials comprising fibres, yarns, and fabrics. Furthermore, the country has plentiful supplies of ordinary fibres such as ramie and silk. Despite China's plentiful supplies of raw materials, the security and dependability of yarn supply is still a worry for the government. To conciliate China's rising demand for ordinary and manmade fibres, the Chinese government has put in place plans to inspire the manufacturing of manmade fibres. The entire volume of fibres processed by China's textile business in 2003 was just above 20 000 000 tons, a year on year rise of fourteen percent. This signified thirty percent of the globe's total production.

4.7.1 Cotton

According to MacDonald *et al* (2004) the supply of cotton stays vital for the textile business. Though the government has reorganised the market throughout spreading the delivery networks and stable price controls, supply remained an issue to administration controls. In the lack of market processes, the government price controllers are participating in setting fees. World cotton trade is comparatively versatile by prices and some trade barricades. Though, as a contribution into textile manufacturing, cotton trade might be considerably changed by the unintended effects of adjustment in globe C&T trade policies. Just as China is the world's main manufacturer and exporter of textiles, it is normally the major distributor of cotton. If anything, China's propensity to absorb losses and later recover the part as highest import market for cotton only increases the significance of China in world cotton values. China's presence as a main distributor tends to correspond with price peaks, such as throughout the mid-1990, and its non-appearance inclines to match to time of price decline, such as in 1999-2001.

4.7.2 Silkworm Cocoon

This product is severely controlled by the government in the districts of manufacturing, buying, distribution and pricing. It is worth noting that though the government doesn't formally set double pricing of fibres and raw materials, particularly cotton and silk, while they are in short supply, private suppliers propose higher values than public enterprises. It is probable that the government will use its tactical reserves to mitigate any important price increase, for example by delivering subsidised raw materials to manufacturers for government procurement. Apart from this context, there's no double pricing for raw materials.

4.7.3 Wool

Presently wool signifies less than five percent of the entire textile production from China, and is then less important than the artificial fibre and cotton businesses. Current investments in the Chinese wool-dispensation subdivision are concentrated mostly on knitting, colouring and final machinery. Until recently, national business bought a big quantity of second-hand equipment from global textile machinery producers. New importations of imported wool dispensation machinery have been undergirded by robust development in wool textile dispensation previously.



4.8 Wholesale

The wholesale market plays a significant role in the fabric subdivision by serving as a vital link amongst thousands of dispersed producers and shops. Textiles wholesale markets succeed in or about main manufacturing groups in China. These wholesale markets typically emphasise bulk sales at lower charges, but in most situations they also trade to people more cheaply than in a retail store

4.9 Sales Agent

Several imported C&T products depend on sales agents to gain entrance to chain stores, counters and department store markets. This model is subject to the agent's current sales resources and skills in marketing and policy. The benefits of this model consist of small capital investment, rapid market entrance, quicker brand localisation and few operational threats. Difficulties include price rises, limited control of branding and, pricing and problems in differentiating good sales agents from others.

4.10 Retail

Domestic beautification and clothing textiles for trade are typically visible in wholesale markets. Textiles for curtains might as well be available superstores for domestic development. Clothing retail is extremely modest, fragmented with fewer entrance barriers and high admission and exit charges. High-end specialized stores and shopping centre with wide floor space and marketing/selling a big variation of goods are the favourite option for most imported clothing and blankets brands. Facing the general economic go-slow from foreign companies, Chinese clothing retailers have extended their product variety to sustain development. As Chinese customers progressively demand stylish and quality goods, external companies have improved their investment in China over recent years.

4.11 Online Retail

A huge total number of new firms are established in by computer industry throughout previous years. The core motives are the statistics around e-commerce. Market share is for national businesses, who understand e-commerce tools and social media very well for them to get Chinese customers. WeChat, established in 2011, becomes a very significant tool for businesses' communiqué in 2016 and is a modern way setting private shopping communities, having then a significant role as a marketplace.

4.12 Conclusion

The development of C&T cooperatives in China has shown completely different methods of technological innovation compared to other countries. A firm's selection mostly depends on

historical, cultural, social and other factors. Meanwhile the selections created by the firms can influence the methods of any technology development within the business and therefore the society. China developed production within the 1980s and 90s. However, these enterprises did not merely take over the technological innovations of developed countries, but created adaptations to the initial models to suit the reality of their own situation. As the technological transformation of the C&T industries continues, the several national characters of China are changing with time too. Facing new market challenges, China's C&T industries are facing basic transformation, and new models of innovation are on their way.



CHAPTER 5: CLOTHING AND TEXTILE INDUSTRIES IN ZIMBABWE

5.1 Introduction

The history of Zimbabwe C&T business dates back to 1920 once the government developed. From 1980 was a time of rapid growing of the Zimbabwe C&T business, (Mlambo, 2006), but Mushanyuri (2014) argues that from 1990 to 1999 the industry witnessed a downward movement within the economic performance of the industry with the arrival of the Economic Structural Adjustment Programme (ESAP) in 1991. The Zimbabwean C&T business remained a main contributor to the growing and expansion of the Zimbabwe businesses and generating more employment not only in textile businesses but also other related divisions such as cotton growers, spinners, weavers, dyers and finishers, producers of chemicals etc. (Nyoni, 2015).

Muranda (1999) explains that most recent C&T exporters have restricted distributing strategies. Presently most exporters distribute with the help of external representatives and are focusing on the EU and bordering markets. The EU is powerfully favoured because goods go into duty-free and quota-free in terms of the Lome W Convention. But most significantly, it offers market niches that are feasible and steady.

Considering the above paragraph, the apparel and textile business in the Southern African Development Community (SADC) may be seen as a complex substructure with a long history of rate protection. Nearly every country in SADC, in one form or the other, has some sort of clothing and textile industrial action. The leading manufacturers are South Africa, Mauritius, Zimbabwe and Malawi, with Zimbabwe being the second highest number of 139 000 total manufacturing. The business in the area is cotton-based, which offers an important benefit in the SADC because of the presence of cotton farmers in South Africa, Zimbabwe, Malawi, Zambia and Tanzania (Muradzikwa, 2001). This is illustrated in Table 5.1.

Table 5.1: Clothing and Textile, and Total Manufacturing Employment in SADC 1998, (Muradzikwa, 2001)

SADC Countries	Clothing and textile industry	Total manufacturing
Angola	300	51 000
Botswana	21 025	25 750
Lesotho	9 368	17 500
Malawi	10 500	46 000
Mauritius	73 573	110 000
Mozambique	5 100	58 000
Namibia	1 000	18 225
South Africa	136 824	1 460 000
Tanzania	8 000	63 500
Zambia	7 800	59 000
Zimbabwe	18 200	139 000

5.2 Social aspect of Clothing and Textile industry in Zimbabwe

The C&T subsectors have role to play for the Zimbabwe economy as a valuable key manufacturing subsector for the country. These sectors give significance commodity which supplies basic demand to countries' people like trousers, dresses, stocking and towels (Joshi, 2013). Zimbabwe's C&T divisions have three-way modules which are: cotton manufacturing and netting, lint transformation into cloth and yarn, and distribution of clothes. The C&T subdivision has a vital role to the economy of Zimbabwe as a sub industrial division (Majoni, 2015).

See Figure 5.1 below showing Textile and Clothing Linkages. (Joshi, 2013)

Textile and Clothing Sector linkages

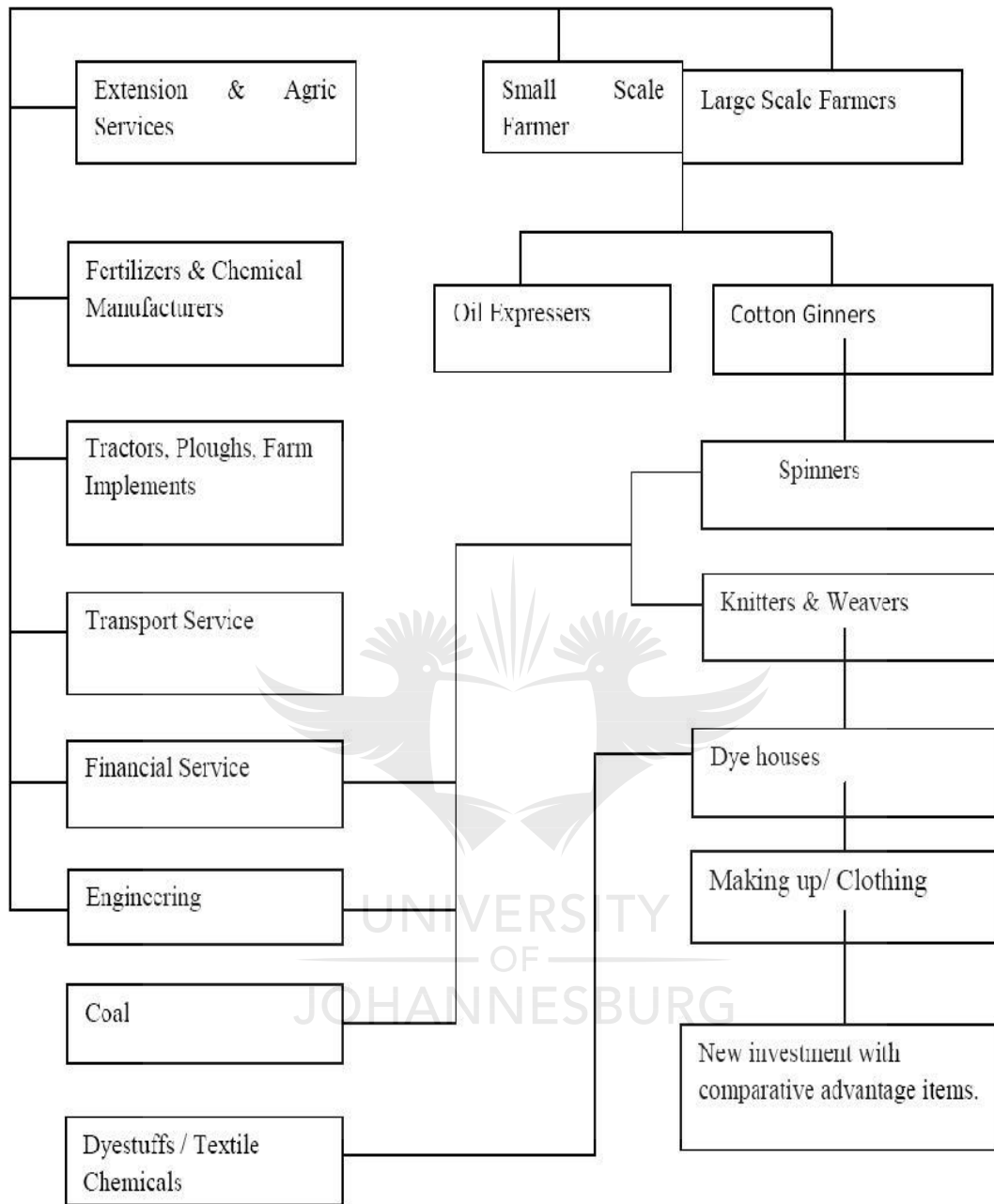


Figure 5.1: Textile and Clothing Linkages, Joshi (2013)

The growth of the industries was led by British cotton growing association which needed to reduce Britain's dependency on American cotton. This ends up in the organization of the Cotton Research Industry Board sector board (CRIB) whose core work was to monitor the expansion of the cotton industries within the country.

See below (Figure 5.2) for Zimbabwean registered C&T companies from 2000-2014

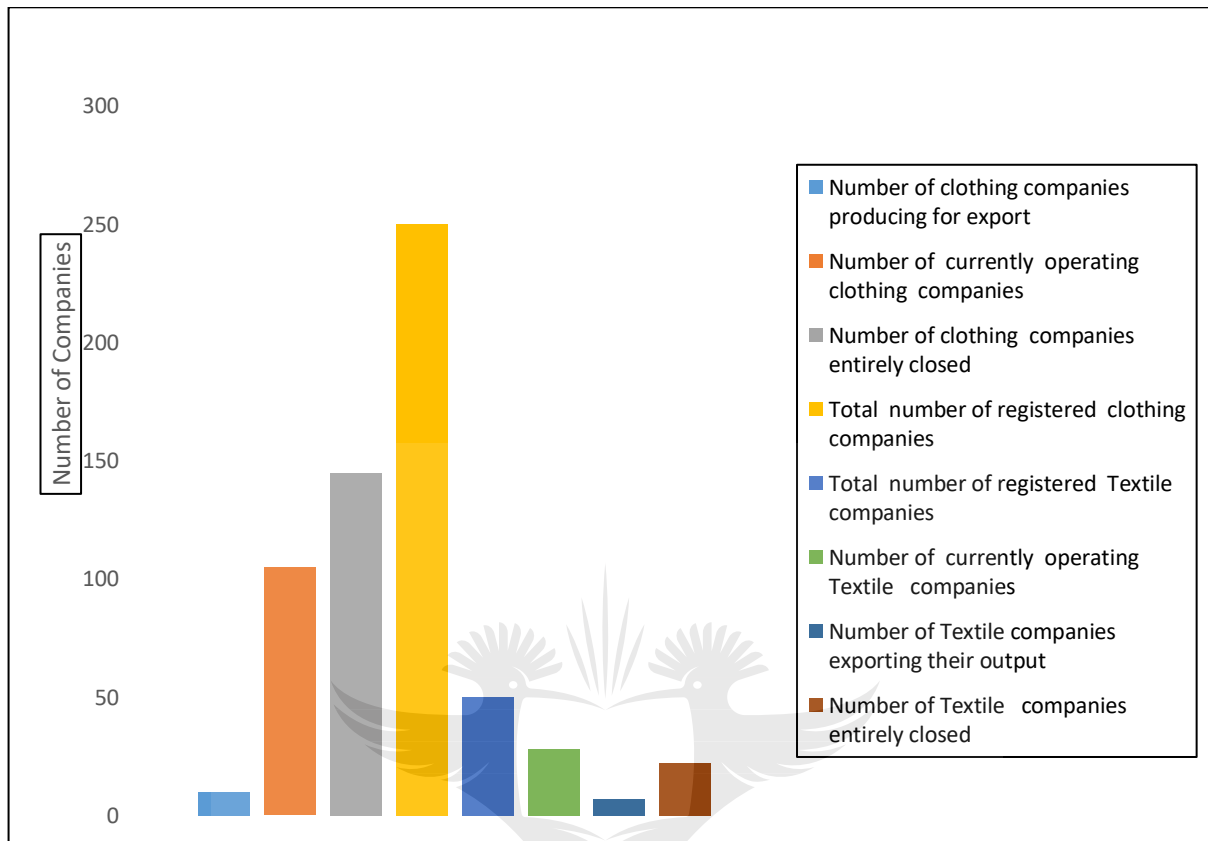


Figure: 5.2: Zimbabwe registered C&T companies from 2000-2014. (Majoni, 2015)

As emphasised by Figure 5.2 above from 2000 -2014 collected information on entire listed clothing firms, the total number of completely closed clothing firms, the total number of presently manufacturing clothing firms, the total number of clothing firms manufacturing for distributing for the period 2000 to 2014 (Majoni, 2015). The number of clothing firms listed by Zimbabwe Clothing Manufacturers Association was 250 and of those, 105 are presently manufacturing which means that an overall number of 145 had permanently closed. From the information collected only 10 firms are manufacturing for distributing. The figure also illustrates the collected statistics of the entire listed textile firms from the Zimbabwe Textiles Manufacturers Association (ZTMA). The figures reveal that there are fifty textile production businesses which are listed with ZTMA for the years 2000 to 2014. In addition, 28 textile firms total 50 are still manufacturing. In relation to manufacturing for distribution it was found that only seven firms from the active 28 are manufacturing for distributing their goods. Twenty-two firms from the listed fifty had permanently closed down their manufacturing.

5.3 Development of the Clothing & Textile Industry in Zimbabwe

5.3.1 Employment

Zimbabwe textile businesses are providing a lot of jobs in textile corporations and simultaneously produce activities for poverty reduction within Zimbabwe such as providing free fabric, shelter to the poor, providing free education to the children for poverty reduction purpose (Joshi, 2013). The C&T sub-sectors face challenging competition from imports of second-hand clothing. The low cost of second-hand clothing is finding its way into several African manufacturing countries like Zimbabwe, thereby negatively impacting on domestic demand for locally produced materials.

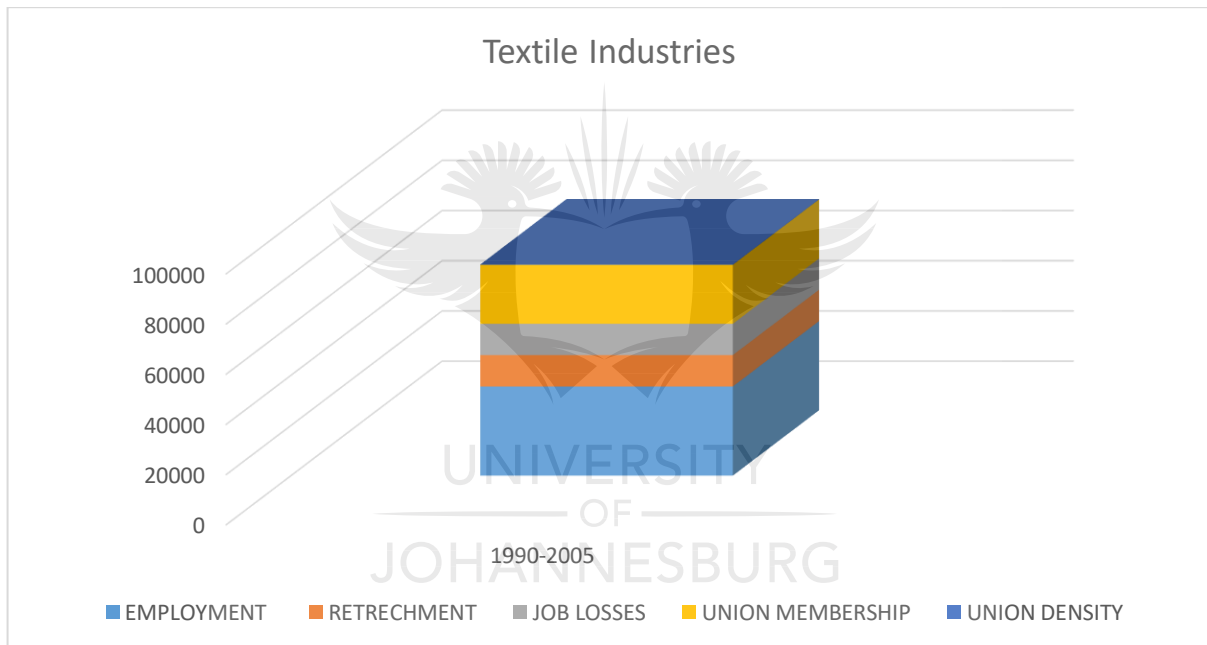


Figure 5.3: Employment, retrenchment, job losses and union membership in textile industries (Kanyenze, 2006).

Figure 5.3 and 5.4 demonstrate the number of employment for C&T businesses have from 24 000 thousand and 27 000 respectively in 1990 to 11 522 and 17 300 respectively by 2005.

The union density in the textile manufacturing improved decidedly to 50% in 1990 and 52% percent in 1999 to 99.8% by 2005, showing the destructive organisation of affiliation by the union succeeding the pressures leading to job losses This was an outcome of the 5 year strategic proposal accepted by the Zimbabwe Textile Workers' Union (ZTWU) in December 1999, which required amongst other things to increase the union density to 90% towards end

of the schedule in 2004. The union density in the clothing business also improved from 55.6% in 1990 to 69.4% by 2005. This growth in affiliation in both businesses was significantly increased by the Zimbabwe Congress of Trade Unions support plan of 1999. Throughout this plan, unions started combined affiliation recruitment exercises and were offered monetary awards.

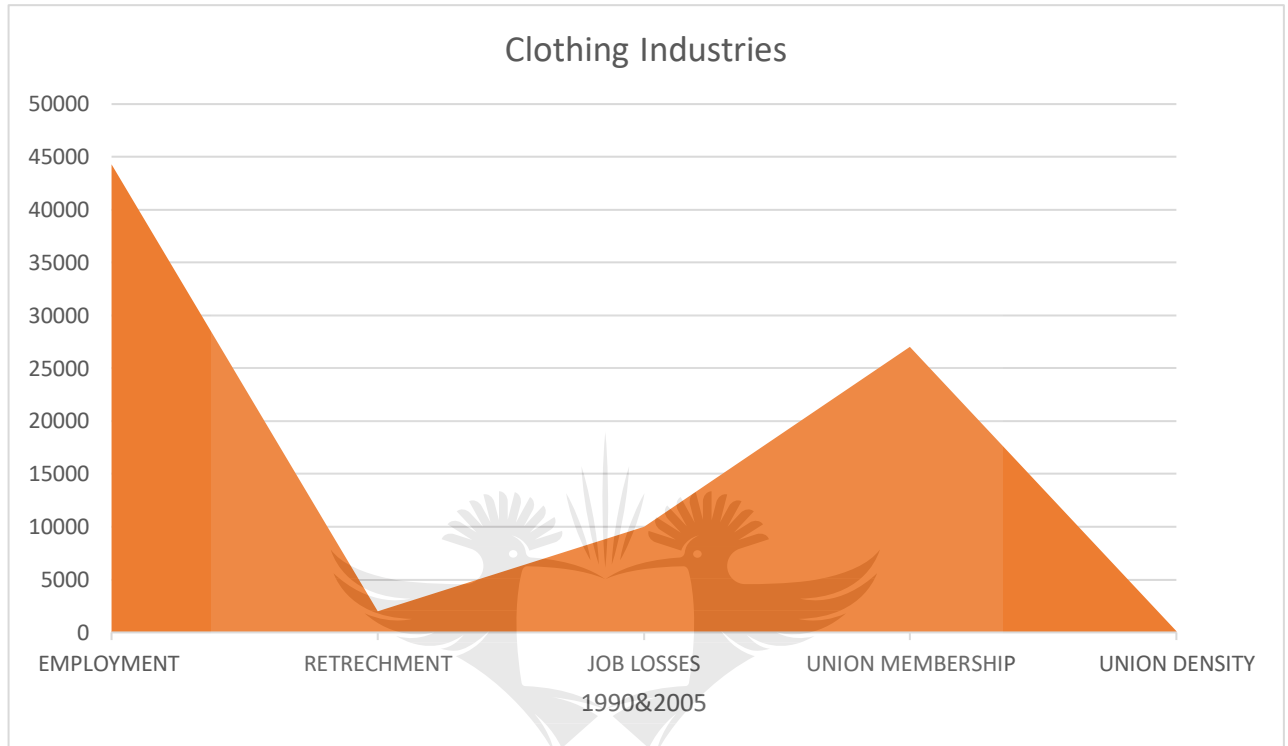


Figure 5.4: employment, retrenchment, job losses and union coverage in clothing Industries. Kanyenze (2006)

5.4 Clothing

Clothing can be referred to as clothing or attire e.g. shirts, trousers, jeans, suits, dresses, blouses, skirts, tracksuits, t-shirts, sweatshirts, overalls, and dust coats. According to Zimbabwe country report (2015), Zimbabwe's national cloth consumption stands at approximately eighteen million metres of cloth, of which only 10% can be sourced in Zimbabwe with the rest being imported from countries like China and South Africa. The industry produces prime quality cotton clothes or brands that are in demand in regional and international markets. Challenges include the high price of production and competition from low-cost poor quality imports; these have a negative impact on the viability of the textile producing and clothing retail industry. But measures that are being put in place by Government to deal with unfair competition, can create conditions for the clothing industries to thrive (Carmody, 2015).

Zimbabwe has a decreasing textile capability, and the total number of textile industries has declined from 200 at peak to the present position of eight textile companies. However, the industry is on the mend as the Zimbabwe Agenda for Sustainable Socio-Economic Transformation, Zimbabwe's economic programme aims at increasing the worth of different measures. This is expected to deal with a number of challenges faced by the textile industry through provision of medium-long term capital to re-tool the aged technology that is both labour and energy intensive (Zimbabwe country report, 2015).



Figure 5.5: Textile Production Phase, Buka (2016).

Figure 5.5 above shows that the textile producing phase of cotton is a huge employer of labour, and going by past performance once large textile producers like David Whitehead, Cone Textiles, Modzone, Zimbabwe Spinners, Merlin Ltd, Karina Textiles and many others that are currently declining were in operation. Most of corporations closed down because of assets shortages and high production prices amongst other issues. However, there are currently various small to medium spinning corporations amongst the surviving giants in operation, but on low capability (Buka, 2016).

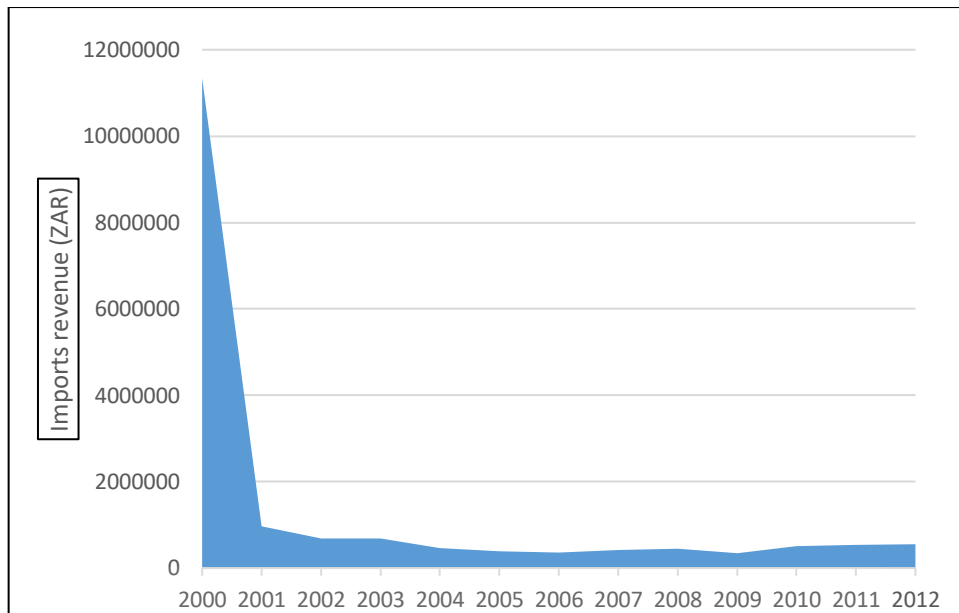


Figure 5.6: Imports of Textile Goods: 2000–2012 (Makasi and Govender 2007)

Figure 5.6 illustrates the import revenue of textile goods in Zimbabwe, from 2000-2012. The imports were low in year 2009 with the total amount of R 345 485, and R362 920 in year 2006. The average revenue was R540 240 and R 505 50.00 in 2011 and 2010 respectively, whereas the highest revenue was R11 344 970 in 2000.

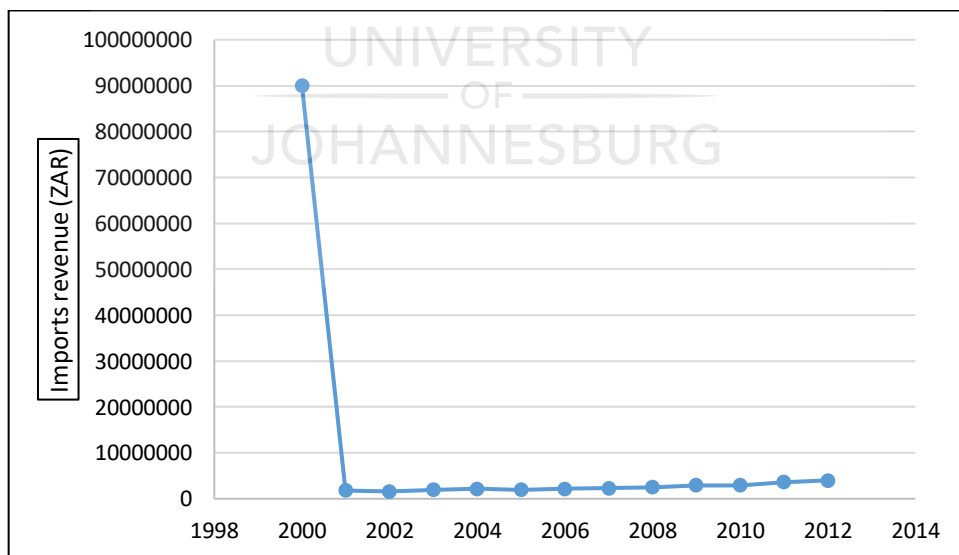


Figure 5.7: Exports of textile goods: 2000–2012. (Makasi and Govender 2007)

Figure 5.7 illustrates the export revenue of Textile goods in Zimbabwe, from year 2000-2012. The imports were low in 2000 with the total amount of R 90 030 313, and R160 42 00 in year

2002. The average amount of revenue was R 2 310 191 and R 2 177 520 in year 2007 and 2006 respectively, whereas the highest revenue was R3 980 250 in 2012.

5.5 Cotton and Yarn

Nyoni (2015), explain that, in the late 1980's and early 1990's, Zimbabwe used to boast of a full cotton to clothing value chain, five percent gross domestic product and hiring over thirty five thousand employees This chain has been regrettably been broken the last decade, primary due to financial collapse of year 2008 and therefore the Autonomous Economic Structural measures that were taken under the ESAP. Esterhuizen (2017) argue that cotton could be a major supply of income for rural communities in these areas. The crop is typically big under contract farming arrangements wherever contractors offer production inputs to farmers on loan. At harvest, the contractor buys back contracted seed cotton, deducts prices of the inputs and pays the contract farmer the remaining balance. But, in year 2015 the Zimbabwe government approved a 3-year free input support program to revive cotton production. Towards the end of July 2012, there have been reports of cotton merchants refusing to shop for the crop at the government announced costs of between 77-84 cents. To the detriment of the farmers, merchants were still shopping for the seed cotton at the previous amount of between 29-35 cents per kilogramme (KG)



Figure 5.8: Cotton and Yarn, (Nyoni 2015)

5.6 Crisis and challenges in Zimbabwe cotton-clothing Industries

Challenges experienced by Zimbabwe cotton-clothing industries within the value chain. (Nyoni 2015):

- Tools and machinery are outdated ; Low efficiency of farmers in everyday operations; Weak extension support information gaps on basic cotton growing practices; Inadequate yield: poor cotton yields per square measure, averaging five hundred to eight hundred kilogram per hectare; Weak infrastructure: offer and price of electricity, poor transport networks, very little or no irrigation infrastructure because of high prices and lack of sources of water; and Access to machinery: there is no access to acceptable medium-scale value adding machinery and lack of acceptable machinery for more process of seed cotton, this can leads to very little value add at the farm by small-scale farmers. Higher domestic demand for ungraded cotton affects farmer's attention to growing quality cotton inspired by merchants who are prepared to pay comparatively high costs for ungraded cotton therefore promoting side selling.
- Unconducive business environment: challenges in accessing credit, inadequate cotton pricing in area, lack of financial support to farmers aside from ginners pre-financing scheme, insufficient coordination of cotton farming activities.
- Insufficient governmental support: small to scale farmers to input support schemes not out there to small -scale and new cotton growers.
- Weak convenience and delivery of certified seeds: Over reliance on one company that has no shops in rural areas, abused use of inputs provided by ginners to farmers under contract farming schemes.

5.7 Leather and Footwear

According to Joshi (2013), leather industry represents value addition whereby the primary stage of the value chain includes leathers' producers, collectors and merchants. They successively sell raw skins to tanners who process them into finished leather. Then that finished leather can be used to produce footwear and other leather goods. Leather industry at its peak in 2001 hired 840 employees. Currently, the industry has more or less than 1 962 employees. At peak in 1999, footwear manufactures and sold-out 17 million pairs of footwear whereas in 2009 - 2010 just 1.9 million and 2.4 million pairs were made respectively. There can be a space for increased value-addition in this sub-industry of footwear and leather if government is committed to give all parties the necessary support. The Zimbabwean government can recapitalize the sector's projects by providing resources to those firms which are in a critical condition.

5.8 Second-hand clothing, illegal imports, and government policy

Over the past 10 years, Zimbabwe has opened itself significantly to the influences of the world economy through a method of liberalisation. The country took this course to raise its rate of growth by stimulating investment. The liberalisation was introduced in Zimbabwe before economic stability (Makasi and Govender, 2017). There was a provision within the Customs and Excise Management Act of a similar year for prohibiting the importation of Second Hand Clothing (SHC) of any description, as well as puttees, hats, caps, used blankets, mattresses and sheets for sale. Muradzikwa (2001) explained that the developing textile manufacturers became progressively more discontented with the implementation of this legislation. Baden and Barber (2015) argue that SHC could in some circumstances complement instead of replace domestic production. In Zimbabwe's informal sector, the majority of tailors and garment manufacturers had a neutral position on competition from the SHC trade. They have not regarded competition between tailored clothes and SHC as an important issue as they were not manufacturing equivalent competing goods. Government incentives have a crucial role in the call to export. However, government incentives become vital for firms that still exported (Muranda, 1999).

According to Mlambo & Phimister (2006) Government Notice No: 22 of 1943 that provided for the disinfection of SHC, beddings, rags and any similar article before importation into the Colony of Southern Rhodesia so as to prevent the introduction of infectious diseases. The expanding textile manufacturers became increasingly dissatisfied with the implementation of this legislation. In November 1951, it was asked whether or not any steps might be taken to prevent the import of SHC, as they were finding it a challenge to sell their own product within the country and had to consider exports as a result of the flood of SHC on the market. The Federation of Rhodesian sector supported the position of the Mashonaland clothing manufacturers and requested that the importation of SHC into the colony be fully prohibited. Meanwhile, the health authorities conjointly claimed that they were no longer in a position to continue with disinfecting SHC and, in the same vein, requested the repeal of Zimbabwe government Notice no 22 of 1943. Not all textile industries supported the decision to ban SHC imports. The SHC trade is indisputably helpful for shoppers in developing countries, who get access to much cheaper garments than they might get from domestic production or from imports of new clothes (Baden and Barber, 2015).

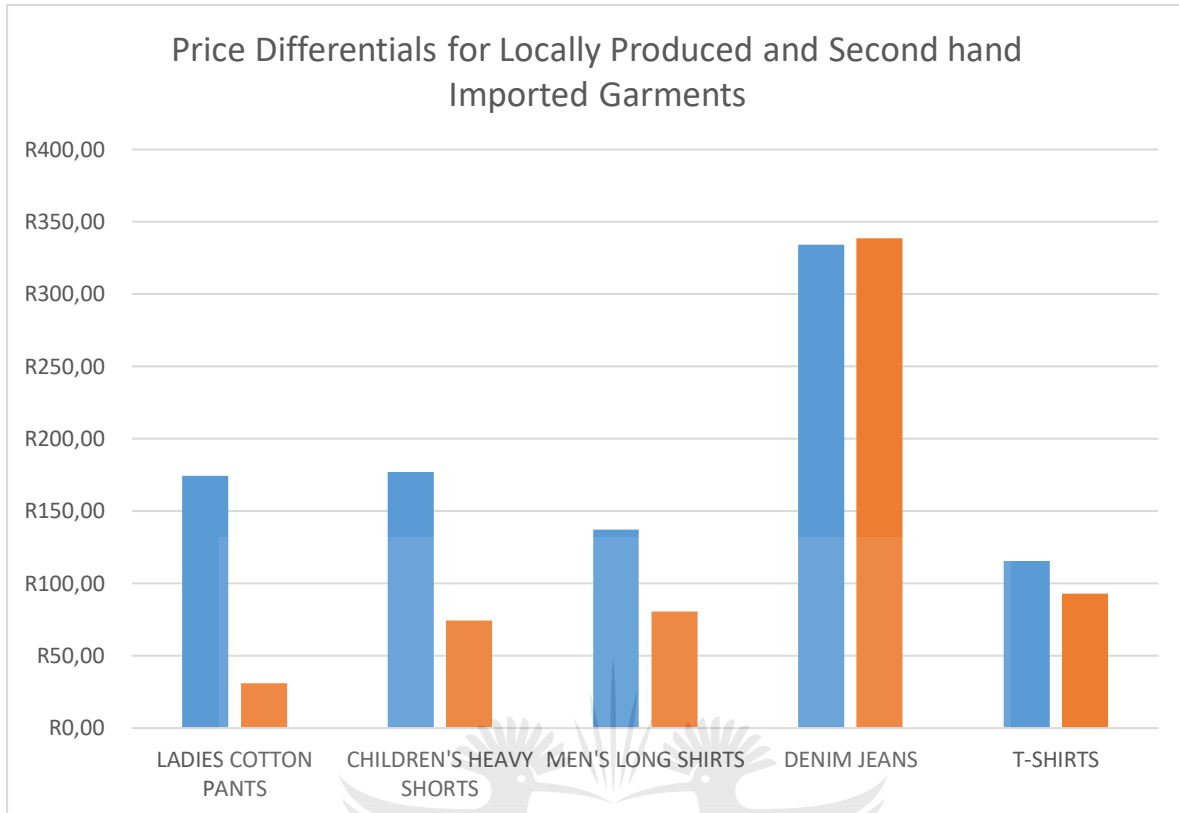
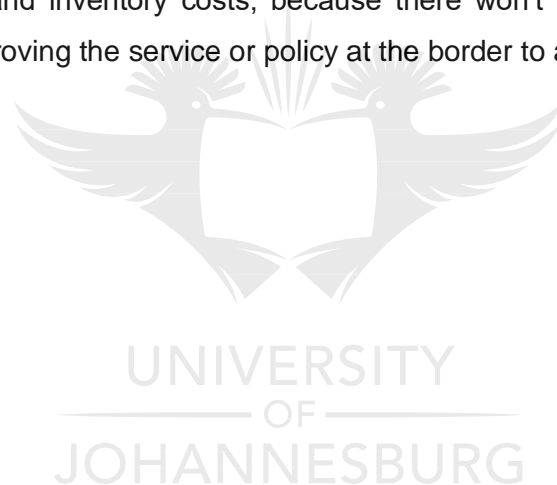


Figure 5.9: Price differentials for locally produced and second-hand imported garments. (Carmody, 2015)

The above Figure 5.9 demonstrates different prices for SHC and locally produced clothes in Zimbabwe. Denim jeans have high prices, in both second hand and locally produced with the amount of R338.72 and R333.96 respectively. Ladies cotton pants are the cheapest with the lowest amount of R31.04 for second hand, and R174.24 for domestically produced; Children's heavy shorts are R74.49 and R176.96 for domestically produced; Men's long shirts are R80.59 for second hand, and R137.03 for domestically produced; and T-shirts with the amount of R93.10 and R115.57 for second hand and domestically produced respectively.

5.9 Conclusion

The Clothing and Textile industry has several challenges that include SHC and illegal imports. This industry forms a serious part of production, employment and trade in Zimbabwe. The cotton-clothing sector can still struggle against the challenging competition created by imports because of high prices. The possibilities of failure in the industries to draw in direct foreign investment hampers the improvement of technologies. For challenges to be achieved within the Zimbabwe clothing, it is very important for organizational development that can help in improving quality. SHC exchange in recipient countries is principally informal. Sometimes there is custom fraud, when new apparel imports are passed as used ones. This has can lead to reduced government income and higher levels of imports and bigger competition for domestic production. It is also important for Zimbabwe to have a trade relations with African countries like South Africa, for Zimbabwe firms import textile from external textile firms. It can reduce transportation and inventory costs, because there won't be a lot of goods. There should be a way of improving the service or policy at the border to avoid illegal imports.



CHAPTER 6: CLOTHING AND TEXTILE INDUSTRIES IN SOUTH AFRICA

6.1 Background

The South African (SA) clothing business is the most labour intensive section of SA manufacturing business. However, various sections of the clothing business co-exist at various salary tariffs because they provide different markets. Obliging all manufacturers to pay the negotiated lowest salary will have the consequence of the relocation of low-salary employments from SA to more lower-pay regions, deprived of any benefit to manufacturers or labour in other divisions of the SA clothing businesses. SA's clothing division is one of the top subdivisions where the movement of in solemnisation has been on the rise in the 1990s (Fakude, 2000).

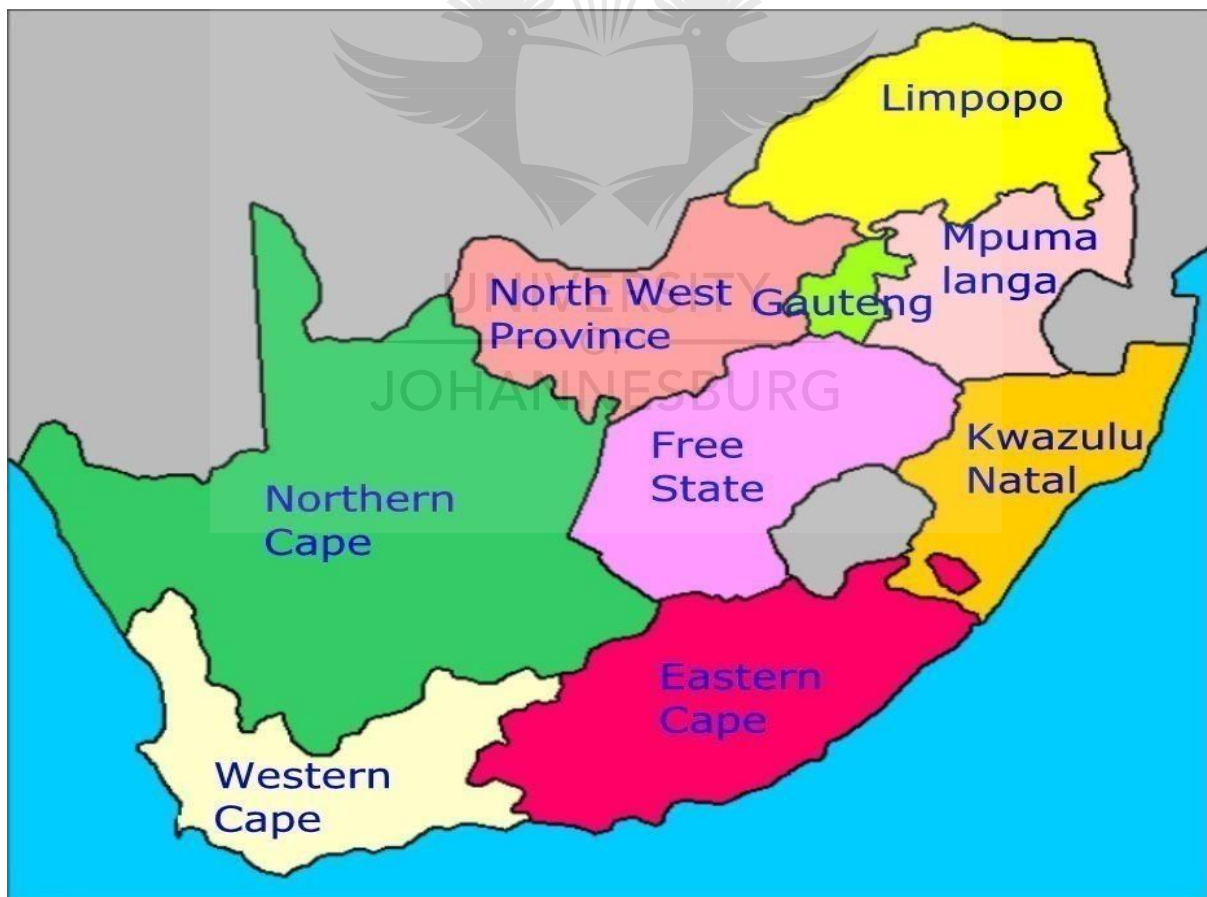


Figure 6.1: Map of South Africa

Ramdass and Kruger (2011) explained that the clothing business is seen as a conservative business with features such as: employment with poorly educated people; low income; little possible for investment in RDI; flexible employment regulation, and influential labour unions.

Nevertheless, it remains to be a significant subdivision in terms of the SA employment market in employment creation. Morris *et al* (2008) argue that it is normally alleged that the clothing business is more suitable to emerging nations as it suggests low-level employments for unexperienced workers and that comparatively current technology can be derived at moderately little investment. As a result, clothing is suitable as an initial stage on the development ranking in developing countries. Nonetheless, it has been challenging for developing countries to generate backward linkages in the division and then imports are typically high in emerging nations. Elements, components and semi-finished products frequently cross the border numerous times before the finished product arrives at the customer. Which this means that charges have a multiplicative influence on prices, rendering the business very susceptible to rate changes.

The C&T businesses have been essential to the improvement of the production business in SA, and both continue as features of national activity, extending from job establishment to exports. The businesses face significant difficulties mainly as a result of SA accepting a policy of export focused on development. National companies are subsequently under strain in order to increase effectiveness and produce quality levels to make sure continued sustainability. These recent demands the production sector, with the restrained situation of trade liberalisation are not as serious in the C&T sector (Salinger *et al*, 1999)

6.2 Industry Size

Defining the total number of firms in the C&T business has continuously been challenging. However, there are about two thousand active clothing, footwear, textile and leather firms, listed with the Clothing, Textile, Footwear and Leather Sector Education and Training Authority. Of these, more than eighty percent are in the C&T businesses. Most firms in these businesses are small-medium size, and they hire in between twenty and two hundred people (Vlok, 2006). Nip (2004) argues that the C&T business is SA's sixth biggest manufacturing division employer and eleventh main exporter of produced goods. After the mining business, it is the second main user of electricity and second major source of tax revenue. The business occupies a significant place in the Republic's economy. C&T account for almost fourteen percent of manufacturing occupation and constitute SA's second major source of tax revenue. The business directly hires two hundred and thirty thousand people, and another two hundred thousand rand in dependent businesses such as logistics and packaging.

6.3 Number of Clothing Companies by Province

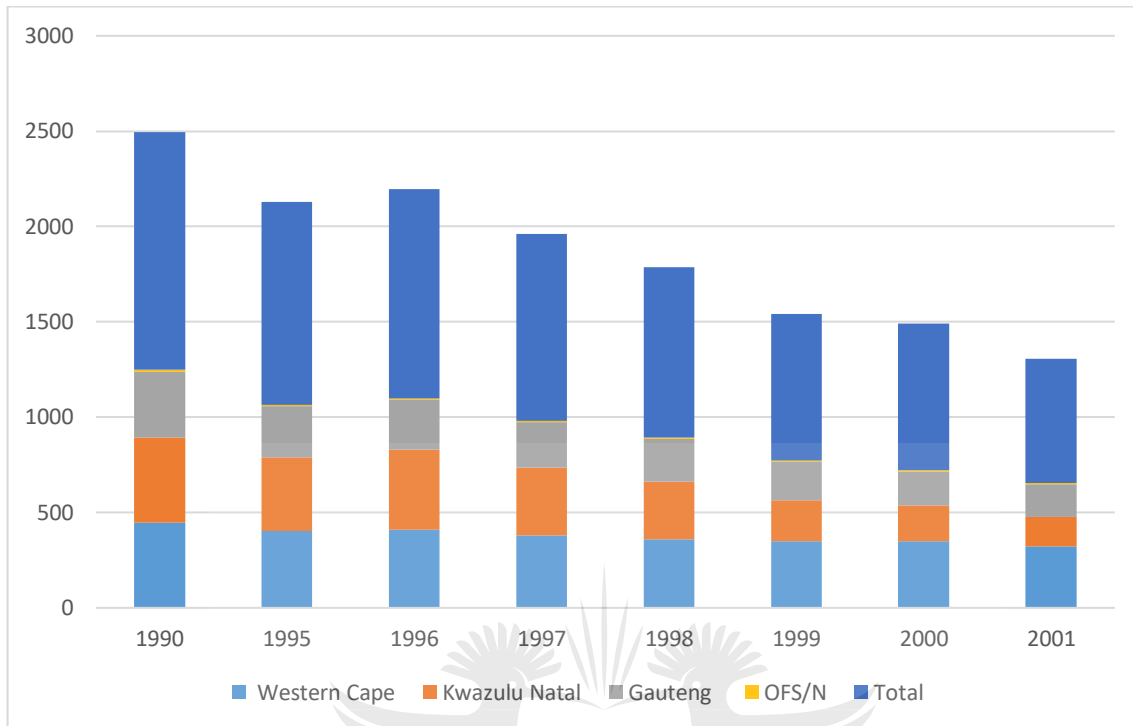


Figure 6.2: Number of clothing companies by province: 1990 – 2001, Flaherty, D. (2002)

Figure 6.2 above demonstrates that the clothing business in SA is focused mostly in 3 provinces, Western Cape (WC), KwaZulu-Natal (KZN) and Gauteng (GP). Prior to the 1960s, the business was centred mainly in Johannesburg, with a minority of companies in Cape Town. However, in the 1950s and 1960s, apartheid laws restrictions on the usage of African employment in city areas. As a result, the business contracted in what was then the Transvaal, and extended in Durban and Cape Town where there was access to Indian and Coloured workers. Cape Town soon turned out to be the business's key sector, concentrating mainly on the big trade chains, partly because most of the top shops were situated in the area. The Durban business established a broader base, but then with a less affluent client base. There has been a decline in the total number of clothing companies in each of the provinces, mainly over the years 1995 to 2001, with KZN facing the greatest comparative weakening of 13.6% over these years. As of 2004 there are a total number of 827 clothing companies of which 327 are situated in the WC, 42 in the Eastern Cape (EC), 219 in KZN, and 239 in the Northern Cape area. The rise in the total number of companies is the consequence of companies in non-metropolitan regions being incorporated in bargaining base figures from 2003, and so these figures are not exactly accurate. (Flaherty, 2002)

6.4 Tariff rates in the South African textiles and clothing sectors

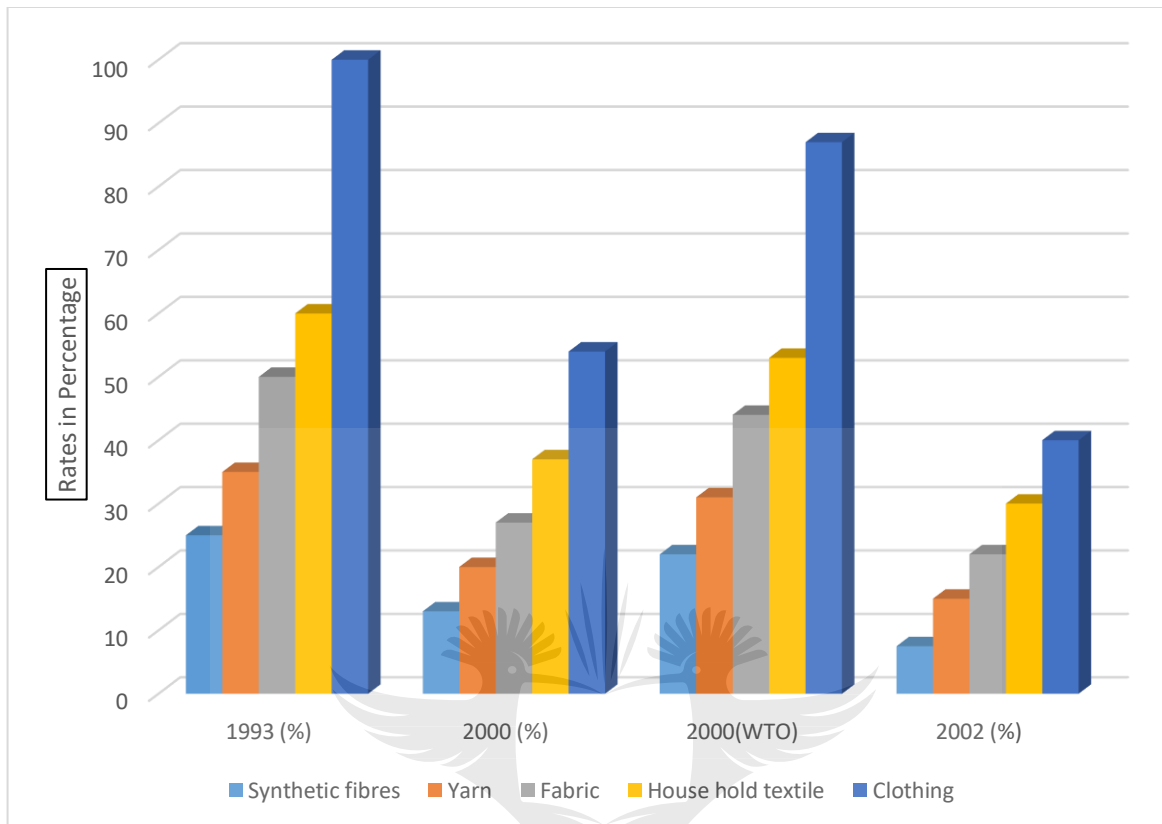


Figure 6.3: Tariff rates in the South African textiles and clothing sectors (Roberts and Thoburn, 2002).

Presently SA’s clothing business is protected by a tariff of forty percent, one of the top tariff charges for a South African manufacturing division, and higher than all of the textiles sub-division pricelists. As indicated in Figure 6.3, there is a 7.5%, 15%, 22% and 30% tariff on synthetic fibres, yarn and fabric and on domestic textiles respectively. South Africa has an arrangement with the WTO where it is dedicated to reducing its charges, though SA has decreased its charges more quickly than required by this arrangement. For example, in 1993 South Africa had a 100% tariff rate on clothing. These charges were required to be decreased to 87% by 2000 in terms of the WTO arrangement. However, by 2000 South Africa had really reduced the tariff to 54% and then to its present amount of 40% (Roberts and Thoburn, 2002).

According to Muradzikiwa (2001) SA with the largest business within the region has the best tariffs on cotton, yarn and materials. In addition, it is required that SA textile producers purchase all the South African-made cotton before they're permitted to import cotton. These protective measures have to be abolished if a successful cotton corridor is to be developed in

SADC. It essentially implies some kind of specialisation among countries in areas of the assembly chain. Every country should contain a relative competitive advantage.

6.5 Wages in South African clothing and textile industry

The majority of employees in the manufacturing are weekly-waged labours, and salaries are generally low. The legally agreed minimum salary as at 1st May 2005 in the manufacturing cities was R217.10 per week. The amount for a skilled machinist in these regions was only R303.56 per week, though in Cape Town and other towns it was R537 per week. These salaries are the lowest in the SA industrial sector (Vlok, 2006). Ramdass and Kruger (2011) argue that salary tariffs are determined in consultation with the National Bargaining Council for the industry in South Africa. Every company in the clothing sector is obliged to be listed with the Bargaining Council, which was established in alliance with the Regional Bargaining Councils in 2002.

6.6 Market and trends in SA Clothing and Textile Industry

According to Ramdass (2013), the weakening of the clothing business in SA can be attributed to a number of factors which has left a trail of poverty stricken, jobless SA females who are typically the family bread-winners. Historical issues that have affected this weakening contain, but are not limited to: The business's defensive prices and apartheid authorisations applied by the State Party in the 1980's; shortage of savings in money; advertising, operational transformation, and skills improvement.

Traditional domestically owned industries with a dearth of working plans, and expensive manufacturing and owned structures led to disarray.

It is significant to note that the SA clothing business developed separately from the national market driving manufacturing. As such it was not able to effect economies. Moreover, the business was protected by an import replacement plan and now that the economy is vulnerable to global competition, it is relatively incompetent, lacks money, technology and innovation, and has high employment and organisation costs in relation to productivity. Conversely, SA clothing exports have usually remained modest and mainly to the US and EU markets. The majority of exports are simple, product items, manufactured because of special trade arrangements that have provided SA with duty and tariff-free admission, where rival nations have usually been limited. Even under these circumstances SA's higher production costs mean that companies have found it challenging to contest with low-cost rivals, such as China and Pakistan (Fakude, 2000). Liberalisation and the reshuffle of the business in the 1990s led to big reductions in jobs, while output has improved through price minimisation and economising rather than productivity (Barnes, 2005).

According to Vlok (2006), in 2004, the SA C&T businesses generated sales of thirty-four billion rand, which regardless of the current decline, is a major influence on business figures. These sales were divided equally amongst two businesses, with textiles paying R17.4 billion and clothing R16.6 billion. Of the entire sales, only 18.7% of textiles produced and 9.4% of clothing sales were distributed as most of sales are generated from the national market. In this regard, it is significant to note that in line with established economies, SA's C&T shops yield substantial value chain power. Literally, the top five shops account for over 70% of official SA clothing sales. The business manufactures through the product range, though the most popular clothes is still in the low end of the market.

6.7 Analysis of sector dynamics

According to Barnes (2005), the SA clothing business is focused in 3 provinces: WC, and KZN. The division includes a number of recognised big companies, SMMEs and homebased businesses. The following table contrasts the WC and KZN clothing sectors.

Table 6.1: A contrast of the WC and KZN clothing sectors: Barnes (2005)

Western Cape	Kwazulu-Natal
Companies are focussed in the Cape Town municipal region.	Companies are situated in the municipal area of Durban and outlying non-metropolitan areas.
The business contains of full-line producers and a big number of CMTs.	The business is mostly comprises CMTs.
Companies are focus to a moderately high cost structure.	Companies are subject to a minor cost structure.
Companies produce mostly for the high end of the market.	Companies manufacture mostly for the lower end of the market and retailers.
Most companies are SA owned.	Many companies are overseas owned: Chinese, Taiwanese, Indonesian and Singaporean.
Companies emphasis national markets due to their high value location and closeness to retail headquarters.	The business's lower price structure has intended that companies in this area have a better distribution focus.

6.8 Challenges and weaknesses in the Clothing and Textile Industries

The SA C&T businesses have experienced challenges and realignments over the previous 10 years due to the joint influence of national and global aspects. The negative influence of this change is obvious in the deteriorating involvement of the division to entire business productivity, its decreasing export share and important reduction in sector employment. These consequences might have been mitigated, had this procedure of realignment been pre-empted and complemented by a focused effort to train outstanding employees and encourage invention in the sector (Morris & Reed, 2008). According to Barnes (2005) from a general point of view, the broader governing environment doesn't directly disturb the production of clothing, as it is a non-invasive manufacturing procedure. Nonetheless, the highly unionised labour force has a noticeable influence given the business's employment- intensiveness. In this regard, salary tariffs, as well as the inflexibility of the employment market, seem to have a predictable consequence on the sector. Many clothing companies are moving to decentralised areas mainly in KZN anywhere they are able to pay lower salaries. This moving has happened in an effort to compete with inexpensive imports as a result of world-wide trade liberalisation and lower salaries in competitor nations.



Table 6.2: Weaknesses in Clothing Industries. Morris & Reed (2008)

Weakness	Description
Firms	<ul style="list-style-type: none"> • Ability of supervision at all levels, but particularly younger individuals. • Restricted research and development. • Restricted independent style. • Restricted information of unfamiliar export markets. • Quality and distribution dependability matters in textiles business.
Environment	<ul style="list-style-type: none"> • Employment costs and employment market flexibility. • Inadequate government support for bigger C&T companies. • Incompetent harbours and costly delivery charges. • Lack of collaboration amongst C&T companies at a sectoral level.
Local market	<ul style="list-style-type: none"> • Unproductive duty controls due to operating in an unsuitable set of instructions. • Focus of national stores and their tendency to import. • Little actual tariff levels protecting the national market.
Global market	<ul style="list-style-type: none"> • Lack of planned corporations amongst government, C&T. • Gap and lead times • Volume in clothing business to deliver necessary quantities

6.9 Imports and Exports of clothing and textile inputs

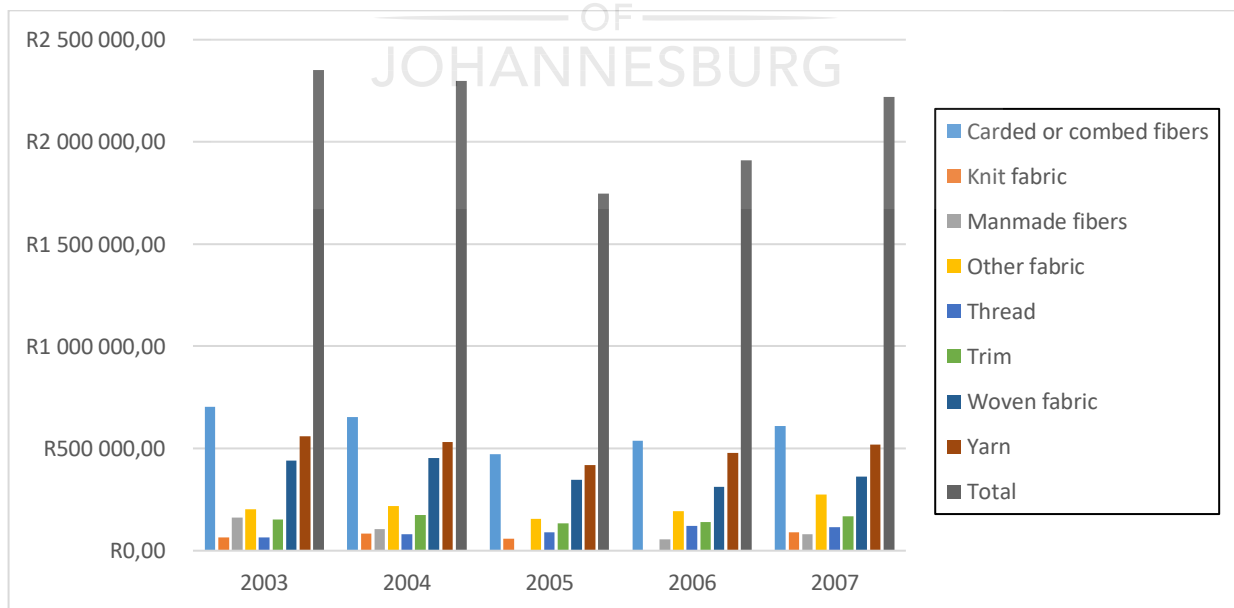


Figure 6.4: SA: Exports of textile and clothing inputs, by product group, 2003–2007
Aranoff *et al* (2000).

Figures 6.4 and 6.5 show the total amount of SA exports and imports of C&T inputs by production group: Exports shows the total amount of R2 350 509, R2 289 945, R1 748 274, R1 909 668 and R1 34 801 for year 2003, 2004, 2005, 2006, and 2007 respectively. In 2003 Carded or Combed fibres was the highest export amount in year 2003, 2004, 2005, 2006 and 2007, with the total amount of R705 049, R653 299, R471 065, R537 961 and R610 731 respectively. Imports total amount is R4 464 726, R5 403 722, R4 627 888, R5 558 996, and R6 556 521 in year 2003, 2004, 2005, 2006, and 2007 respectively. The highest amount of imports was R921 289 for Yarn in year 2007, and the lowest amount of imports was R34 671 for Carded or Combed in year 2005. The highest imports are in Yarn whereas the highest exports are in Carded or Combed.

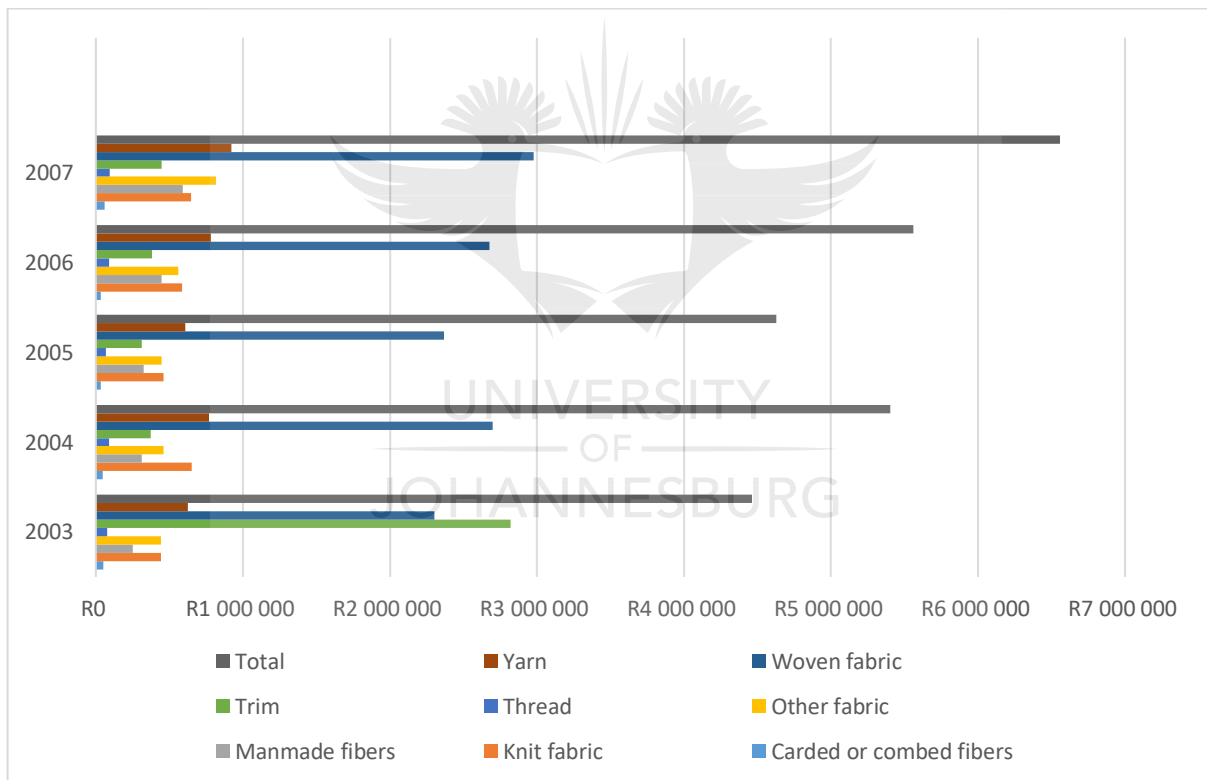


Figure 6.5 :SA Imports of clothing and textile inputs, by product group, 2003–2007. (Aranoff et al 2009).

6.10 Policies in South African Clothing and Textile Industries

Table 6.3: Environment Policy and Economics of SA's C&T Sectors. (Salinger *et al*, 1999)

Policy	Discussion
Environment Policy	Employment market involvements, together with trade and investment rules, govern this policy environment. Whereas there are other national policies particular to the C&T sectors, most of these are usually appropriate to the industrial subdivisions in the economy.
Labour Market Policy	The rule of the official employment market is dealt with in SA by Industrial Councils and the Wage Board. The previous relates to all unionised employees, whereas the last is an organisation dealing with nonunionised workers. Every employee in the economy, together with those in C&T, are protected by the following main methods of employment regulation: Basic Conditions of Employment Act, No. 75 of 1997; The Labour Relations Act, No. 66 of 1995; Unemployment Insurance Act, 1966; and Workmen's Compensation Act, 1941.
HR Training and Development	As for more overall HR development and employment training programmes, the Department of Trade and Industry is involved with the Department of Labour to improve a suitable manufacturing framework for upcoming training schedules. A green paper is predicted soon on a HR improvement plan.

6.11 Clothing and Textile Framework

As illustrated in Figure 6.6 below, Ramdass (2007) developed a framework for a competitive clothing and textile industry. The framework indicated a drive and commitment that management should acknowledge in clothing and textile industries regarding improvement initiatives. Industries can achieve this by giving employees an opportunity for training and education, and also greater focus on employee empowerment, to be able to manage their own methods, and also introducing the idea of total management. This can help in improving the business process.

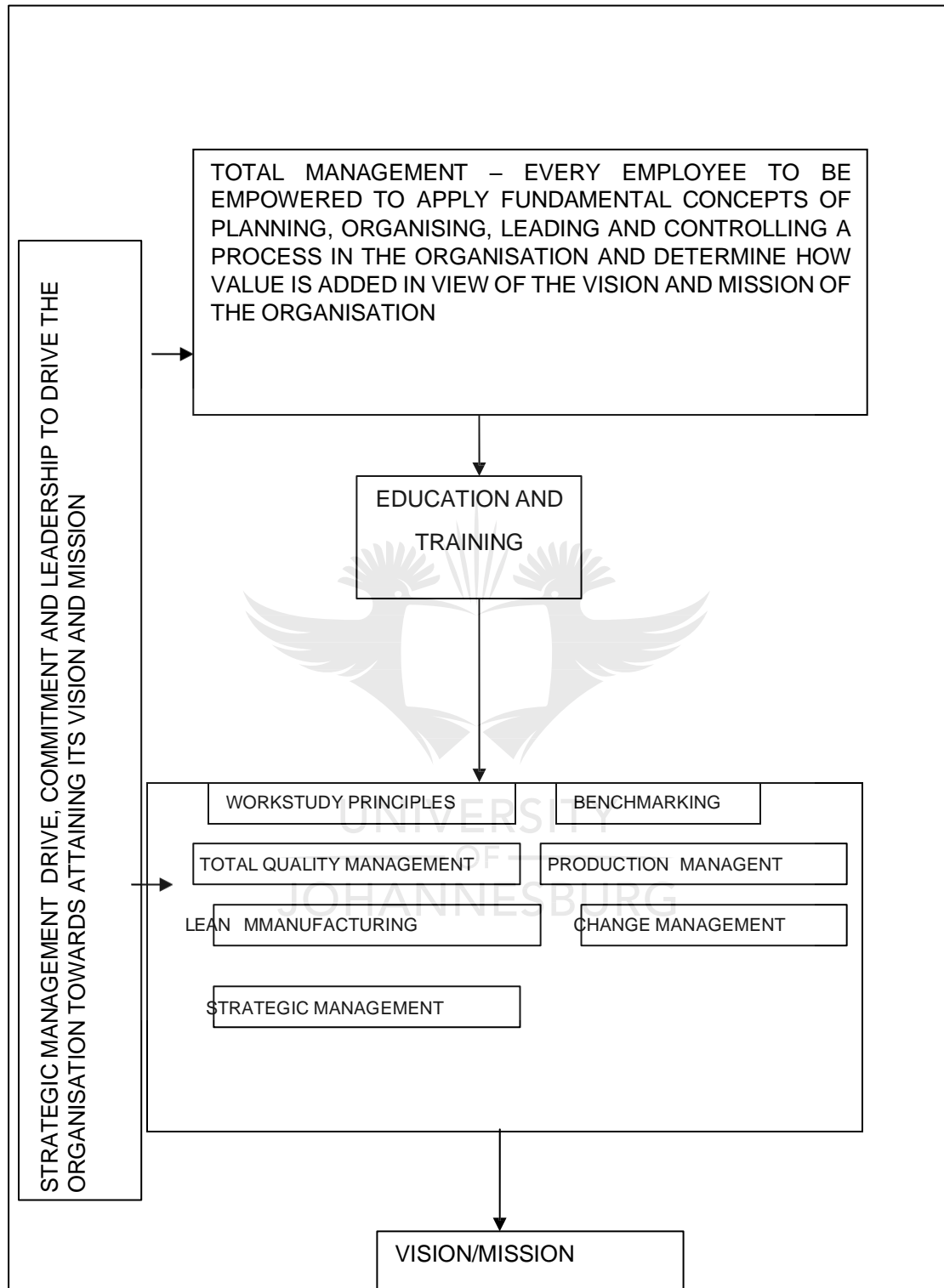


Figure 6.6 Clothing and Textile Framework; Ramdass (2007)

6.12 Reason for choosing China and Zimbabwe Literature review

It should be pointed out that China and Zimbabwe literature review were used in this study is due to the fact that on the global scale China is one of the largest clothing and textile market. Whilst, Zimbabwe Clothing and Textile industry is on the biggest from the Southern African Development Community region.

Table 6.4: Overall technical textile market rankings (Top Markets Report Technical Textiles, 2016)

Overall Technical Textile Market Rankings	Overall Technical Textile Market Rankings	Top Non-Woven Market Rankings	Top Non-Woven Market Rankings	Top Specialty and Industrial Fabrics Market Rankings	Top Specialty and Industrial Fabrics Market Rankings
1 Mexico	36 Austria	1 Mexico	39 El Salvador	1 Mexico	40 Thailand
2 Canada	37 Czech Republic	2 Canada	40 Turkey	2 Canada	41 New Zealand
3 China	38 Indonesia	3 Honduras	41 Switzerland	3 China	42 Qatar
4 Germany	39 Spain	4 China	42 Guatemala	4 Hong Kong	43 Ecuador
5 United Kingdom	40 New Zealand	5 Belgium	43 Israel	5 United Kingdom	44 Switzerland
6 Japan	41 Haiti	6 Germany	44 Spain	6 Japan	45 South Africa
7 Hong Kong	42 Luxembourg	7 Japan	45 Panama	7 Germany	46 Guatemala
8 Honduras	43 Angola	8 United Kingdom	46 Malaysia	8 Korea	47 Israel
9 Belgium	44 Turkey	9 Vietnam	47 Sweden	9 Dominican Republic	48 Philippines
10 Netherlands	45 Ecuador	10 India	48 Cameroon	10 Brazil	49 Czech Republic
11 Korea	46 Israel	11 Dominican Republic	49 Nicaragua	11 Nicaragua	50 Bangladesh
12 Dominican Republic	47 South Africa	12 Korea	50 Venezuela	12 Malaysia	51 Iraq
13 Brazil	48 Uruguay	13 Brazil	51 Nigeria	13 Italy	52 Sri Lanka
14 Australia	49 Finland	14 Netherlands	52 Romania	14 Vietnam	53 Suriname
15 United Arab Emirates	50 Panama	15 Hong Kong	53 Trinidad & Tobago	15 India	54 Russia
16 Singapore	51 Sri Lanka	16 Czech Republic	54 Jordan	16 Australia	55 Panama
17 India	52 Guatemala	17 Thailand	55 Finland	17 Belgium	56 Jamaica
18 Vietnam	53 Qatar	18 Colombia	56 Barbados	18 Poland	57 Slovakia
19 Chile	54 Russia	19 Australia	57 Hungary	19 Netherlands	58 Trinidad & Tobago
20 Colombia	55 Jordan	20 Luxembourg	58 South Africa	20 France	59 Denmark
21 Poland	56 Philippines	21 Singapore	59 Norway	21 Singapore	60 Sweden
22 Taiwan	57 Mali	22 Costa Rica	60 Sri Lanka	22 Haiti	61 Pakistan
23 Saudi Arabia	58 Trinidad & Tobago	23 Taiwan	61 Slovakia	23 Taiwan	62 Kuwait
24 Italy	59 Sweden	24 Ireland	62 Cayman Islands	24 Honduras	63 Egypt
25 Peru	60 Denmark	25 Peru	63 Austria	25 Austria	64 Hungary
26 France	61 Kuwait	26 Argentina	64 Bangladesh	26 Costa Rica	65 Romania
27 Costa Rica	62 Nigeria	27 Uruguay	65 Guyana	27 United Arab Emirates	66 Nigeria
28 Thailand	63 Cambodia	28 Chile	66 Philippines	28 Chile	67 Oman
29 Nicaragua	64 Jamaica	29 New Zealand	67 Morocco	29 Peru	68 Angola
30 Malaysia	65 Norway	30 Russia	68 Qatar	30 Colombia	69 Bahamas
31 Venezuela	66 Suriname	31 United Arab Emirates	69 Bahamas	31 Saudi Arabia	70 Norway
32 Switzerland	67 Egypt	32 Cambodia	70 Bulgaria	32 Finland	71 Estonia
33 Argentina	68 Bangladesh	33 Indonesia		33 Ireland	72 Uruguay
34 Ireland	69 Hungary	34 Poland		34 Argentina	73 Guinea
35 El Salvador	70 Pakistan	35 Saudi Arabia		35 Indonesia	74 Luxembourg
		36 Italy		36 El Salvador	75 Bolivia
		37 France		37 Spain	76 Bahrain
		38 Ecuador		38 Turkey	77 Portugal
				39 Venezuela	78 Barbados
					79 Cambodia

6.13 Total manufacturing in SADC Clothing and textile industry

Table 6.5: Overall Technical Textile Market Rankings: (Top Markets Report Technical Textiles, 2016)

Top Medical Textile Market Rankings	Top Medical Textile Market Rankings	Top Protective Apparel Market Rankings
1 Mexico	33 New Zealand	1 Canada
2 Canada	34 Argentina	2 Mexico
3 Germany	35 Jordan	3 United Arab Emirates
4 Netherlands	36 Ukraine	4 United Kingdom
5 China	37 Malaysia	5 China
6 Japan	38 Indonesia	6 Dominican Republic
7 Dominican Republic	39 India	7 Japan
8 Australia	40 Czech Republic	8 Chile
9 United Kingdom	41 Costa Rica	9 Australia
10 Singapore	42 Denmark	10 Poland
11 Saudi Arabia	43 Ecuador	11 Singapore
12 Switzerland	44 Russia	12 Germany
13 Brazil	45 Turkey	13 Korea
14 Korea	46 Sweden	14 Venezuela
15 Chile	47 Guatemala	15 Peru
16 Taiwan	48 El Salvador	16 Saudi Arabia
17 Belgium	49 Honduras	17 Colombia
18 United Arab Emirates	50 Qatar	18 Jordan
19 Poland	51 Norway	19 Brazil
20 Venezuela	52 Trinidad & Tobago	20 Uruguay
21 South Africa	53 Bahamas	21 Netherlands
22 Hong Kong	54 Kuwait	22 France
23 Colombia	55 Finland	23 Taiwan
24 Peru	56 Philippines	24 Hong Kong
25 Ireland	57 Vietnam	25 El Salvador
26 Italy	58 Jamaica	26 Kuwait
27 Austria	59 Greece	27 Argentina
28 France	60 Bolivia	28 Panama
29 Panama	61 Uruguay	29 Trinidad & Tobago
30 Israel	62 Egypt	30 Ecuador
31 Spain	63 Nicaragua	31 Indonesia
32 Thailand	64 Portugal	32 India
		33 Spain
		34 South Africa
		35 Denmark
		36 Honduras
		37 Nigeria
		38 Thailand
		39 Latvia
		40 Malaysia

6.14 Conclusion

The South African clothing and textile business it is one of the key players in terms of economic growth, gross domestic product and employment. Over the past decade, this sector has developed well in numerous other nations. The manufacturing business offers opportunities for change and growth of produced exports to other nations that can abuse their workers and occupy developing niches and satisfy increasing purchaser demands. These are active influences of clothing and textile. And a relationship should be constructed between the clothing manufacturing and textile traders. To this end, the following chapter covered the research methodology adopted in this study.



CHAPTER 7: RESEARCH METHODS

7.1 Introduction

Chapters 2, 3, 4, 5, and 6 discussed critical assessment of previous studies, an ERP literature review, and literature review of China, Zimbabwe and South Africa. In this chapter we are concerned with research methods. A total of 119 questionnaires, containing both qualitative and quantitative questions were distributed to ERP specialists and clothing and textile companies. Research methods focused on mixed method, process of research, data collection, data analysis and interpretation. Sample size, and the area are also discussed. The research will also help in contributing to SME's, especially in clothing and textile industries, in South Africa.

7.2 Research design and method

The study used a mixed method to identify benefits, critical success factors, and challenges in the ERP industries. A comprehensive questionnaire was developed. A total of 119 questionnaires were answered, out of those 119, 18 were sent to clothing and textile industries, and 101 were sent to ERP specialist around South Africa, where most of the respondents were from Gauteng. Descriptive statistics, reliability indices, factor analysis, and gap analysis were all used.

White (2002) contends that qualitative researchers accept the premise that that certainty is not easily divided into discrete, measurable variables. Qualitative researchers are often described as being the research instruments because the bulk of their data collection depends on their personal involvement. Quantitative research can be used to determine the relationship between the assumed situations, theory and variables related to literature review and the reality as described by perception of workers.

The researcher also used a quantitative questionnaire method to gather the desired results. According to Muyengwa (2000), research method defines how the study will be conducted. Because the researcher focuses on a mixed method, respondents were able to answers questions on the same document. The advantage of closed-ended questions was that they are very easy to analyse compare to open-ended. The researcher divided questions into three sections (ERP Specialists), and two sections for non- specialists.

SECTION A: General information and critical success factors for ERP adoption and implementation:

Section A.1 of ERP specialist contained 9 questions of background information:

- What is your age?
- What is the highest qualification you have achieved?
- What is your current position?
- How many years' experience do you have in this sector?
- Which of the following best describe your business type?
- What is your business function? (If more than one, choose the main function)?
- Which of the following ERPs does your company use?
- How many years' experience do you have in this sector?
- For how long has your company been using the ERP chosen above?
- Did you use a different ERP before the one chosen above?

Section A.2 consists of 9 critical success factors:

- Vision and planning of Project.
- Choice of an ERP system.
- Support from Top Management.
- Project Management.
- Project Champion.
- Business Process Re-engineering.
- Communication.
- User Training and Education.
- Organizational Resistance.

Section A. 3. Consisted of measuring quality of implementation and outcome:

- How would you rate the quality of implementation of the ERP system in your company?
- How satisfied is the company with the ERP system it has implemented?
- How easy is it to use the ERP adopted by your company?
- Below is a list of attributes for information used in the company. In column A rate the quality of each information attribute BEFORE implementation of the ERP and in column B rate the quality of each attribute AFTER implementation of the ERP system.

Below is a list of factors relevant to a company. In column A rate the quality of each factor BEFORE implementation of the ERP and in column B rate the quality of each factor AFTER implementation of the ERP system.

Section B: ERP adoption and implementation

- Please explain fully what has motivated your business organization to implement ERP into its business activities.
- Describe the quality of the ERP training when the company started to work with the new ERP system
- Elaborate on the implementation of the ERP system.
- The current ERP framework is efficiently implemented by your company. Describe your response to this statement.

- Explain the critical factors that have impact on ERP system implementation
- Describe the managerial factors which have impacted on the ERP system implementation
- Please describe the impact of the project plan and Vision on the ERP system implementation.
- Please describe your company use of the ERP system? (Frequency?)
- What should be taken into consideration with to improve the user experience with the new ERP system?

ERP specialists/user questionnaire was structured in such a way that there is a measurements of respondents' perception on ERP on a five point scale: Very poor, Poor, Average, Good, and Excellent.

SECTION A: Biographic information - Clothing and Textile Industries

- Age
- Highest qualification achieved
- Current position
- Experience
- Business type

Section B: Open ended questions

- How does the clothing and textile sector view Enterprise Resource Planning decisions in the different institutional and economic contexts within which they operate?
- Please give your viewpoint of how investors in the Clothing and Textile sector view the need for ERP implementation.
- Please describe the challenges of implementing an ERP in SMEs, mainly in Clothing and Textile business
- Please detail the incentives for implementing an ERP system in SME's, mainly in clothing and textile business.
- Please explain how you think the implementation of ERP will improve the Clothing and Textile Sector.

7.3 Research Area and Population

The study was conducted in South Africa, mostly in Gauteng province. The reason why most questionnaires were distributed in the province was because most of the companies are implementing an ERP system, and there are also SME's not using the system.

The research population must be clearly and unequivocally described, else reports about the population after the study might not be reliable (Mugenda and Mugenda, 1999). ERP specialists and clothing and textile industry employees form part of the population, because specialists have a good knowledge about the use of ERP and its implementation. The sample size was 119 (101 specialists, and 18 non specialist/user). More than six companies using different ERP systems gave feedback, and they were part of the respondents. The target population was: directors, managers, supervisors, and employees in South Africa.

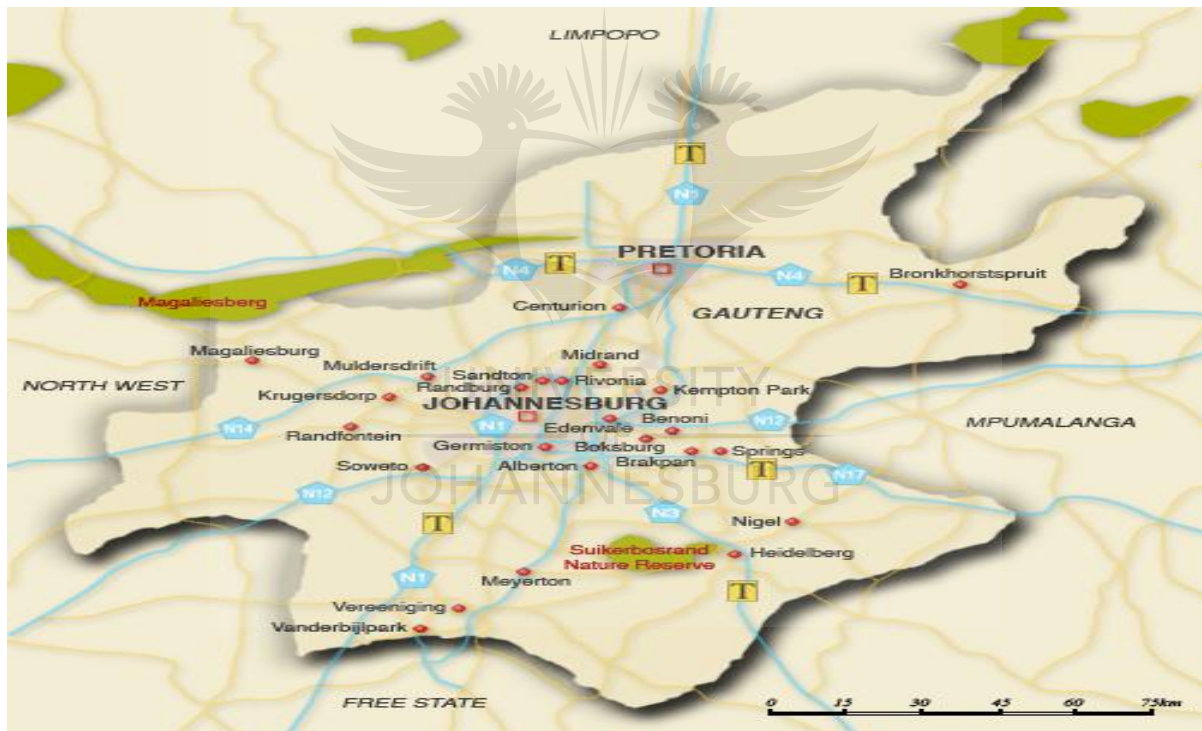


Figure 7.1: Gauteng Map

7.4 Sampling size

Different questionnaires were circulated to different companies around Gauteng. 119 were sent to ERP specialists via email, and clothing and textile employees, while some were delivered during site visits. Employees were given enough time to respond, especially those who received questionnaires via email.

7.5 Data collection

The researcher also used questionnaires to collect important information related to the research area or topic, and both primary and secondary data were used. Some of questionnaires were sent via emails, to enable ERP users enough time to complete them. The use of questionnaires was an advantage because data collection and analysis was time consuming, even though they were analysed using SPSS. The majority of the respondents were aware of and understood the ERP system and implementation that is why the feedback was likely to be very rich. However, the absence of the researcher restricted the opportunity to get more feedback from other companies.

7.5.1 Primary data

The primary data for the study was questionnaires. They were designed (open & closed ended), by the researcher following assistance from UJ's Director of STATKON. The closed ended questionnaire was well designed, allowing respondents to provide feedback easily, and also for consultants to analyse using SPSS. As indicated in Table 7.1 below the ERP specialist questionnaires focusses on different companies in South Africa. 59.4% of questionnaires were distributed in large enterprises, 28.7% in medium enterprises, 7.9% in small enterprises, and 1.0% in micro enterprises.

Table 7.1: Business type

		Frequency	Percent	Cumulative Percent
Valid	Micro enterprise: 5 workers or less	1	1.0	1.0
	Small enterprise: 6 – 49 workers	8	7.9	8.9
	Medium enterprise: 50 – 200 workers	29	28.7	37.6
	Large enterprise: 200 and above workers	60	59.4	97.0
	Other	3	3.0	100.0
	Total	101	100.0	

Data was collected in different business types that are using an ERP system, as indicated in Table 7.2 below: Manufacturing (42.6%), Clients (17.8%), Finance (17.8), Marketing (7.9%) and other (13.9 %).

Table 7.2: Business function

		Frequency	Percent	Cumulative Percent
Valid	Clients	18	17.8	17.8
	Finance	18	17.8	35.6
	Manufacturing	43	42.6	78.2
	Marketing	8	7.9	86.1
	Other	14	13.9	100.0
	Total	101	100.0	

As indicated in Table 7.3 below, data was collected in companies that are implementing an ERP system, 39.6% of companies are using SAP, 17.8% are using Oracle, 16.8% are using SYSPRO, 12.9 % Baan, 5.9% Micro dynamics, 3.0% JD Edwards, and 4.0%, other.



Table 7.3: Types of ERP system.

		Frequency	Percent	Cumulative Percent
Valid	JD Edwards	3	3.0	3.0
	LN/ Baan	13	12.9	15.8
	Microsoft Dynamics	6	5.9	21.8
	Oracle	18	17.8	39.6
	SAP	40	39.6	79.2
	SYSPRO	17	16.8	96.0
	Other	4	4.0	100.0
	Total	101	100.0	

7.5.2 Secondary data

Secondary data mainly consisted of available database (published journals, articles, and books), literature review, together with companies' magazines/websites regarding ERP systems.

7.6 Data Analysis

SPSS from the University of Johannesburg was considered. The analysis was taken on with the idea of arranging data collection to get feedback from research questions .Part of data analysis focused on: Descriptive Analysis: Biographic Information (ERP specialists); Descriptive Statistics; Factor Analysis; Exploratory reliability analysis, Tests of Normality; Results from Correlation; Results from open ended responses; Descriptive Analysis: Biographic Information (Clothing and Textile Industries); and Results from open ended responses, Which were considered to give more responses from questionnaires. Reason for using factor analysis was making sure that results are analysed in various sections, e.g. Section 2 of ERP critical success factors; and 3 of measuring quality. Test for normality and correlation were also used based on critical success factors, and measuring quality of ERP implementation.

7.6.1 Descriptive Analysis

The descriptive statistics have the total number of uses which includes the description of the characteristics of sample being researched. It also assists in checking all variables for any violation of the assumption of underlying the techniques of stats that can be used to address research questions, and addresses research objectives. (SPSS guide 6, 2007) The study uses descriptive statistics for all CSFs of ERP.

Assessing normality: Test for normality indicates the Kolmogorov-Smirnov statistics, it assist in assessing the distribution of the score, this uses a non-significant value of more than 0.5 , which indicates a normal distribution, that also suggests the violation of the assumptions of normality, which is common if scales are larger. The study focused on tests for normality for all 9 CSF, and Measuring quality of implementation and outcome. Test for normality used Kolmogrov-Smirnov tests, because all factors' degree of freedom (df) values were more than fifty, the total degree of freedom (df.) was 101.

7.6.2 Factor Analysis

Factors analysis focuses on a big set of variables, it also considers a method that might reduce the data, focusing on a smaller set of factors or components. Factors analysis prepares this by focusing on groups amongst interrelation of a set of variables. For factor of correlation matrix to be considered as an appropriate factor, correlation matrix must indicate an appropriate correlation of $r=0.3$ or more than that; Bartlett's test of Sphericity must be statistically significant at $p < 0.5$, and Keiser-Meyer-Olkin (KMO) value must be .6 or above. And to determine how many factors to extract, using Kaiser's criterion, a researcher should only focus on components that have eigenvalue of one or more. (SPSS guide, 2007).The researcher used a sample size of 101, which the ratio of 5 to 7 cases of each of 9 critical success factors, and focuses on eigenvalue of 1 or more, and also focused on the total variance explained to determine the total number of components that meet the criterion . The researcher also focuses on components matrix, which indicates the unrotated loadings of each items.

7.6.3 Exploratory reliability analysis

It is vital for a researcher to check scales that are reliable when selecting scale that is supposed to be included in a study. Cronbach's Alpha coefficient is the most commonly used indicator of internal consistency, and its scale should be above .7. If there are low values of 0.5, it is very important for a researcher to discuss the mean inter-item reliability for correlation for each item. Depending on the sample that it is used, reliability of those items might differ (SPSS guide, 2007).

The study uses reliability scales of Cronbach's Alpha Based on Standardized Items, for all critical success factors. Vision and planning of Project 0.884, Choice of an ERP system 0.758, Support from top management 0.896, Project management 0.833, Project Champion 0.762, Business Process Re-engineering 0.857, Communication 0.902, User training and education 0.875, and Organisational resistance 0.864, Measuring the quality before implementation 0.795, Measuring the quality after implementation 0.869; Rating the quality of factors relevant to a company, before implementation 0.923, and Rating quality of factors relevant to a company, after 0.910. The researcher also discusses Reliability Statistics and Summary Item Statistics.

7.6.4 Correlation

The study focused on correlations tests for all nine CSF, Measuring quality of ERP implementation and outcome, and rating factors. The researcher uses tests for non-parametric correlation, which considered the Spearman Rank Order Correlation (ρ), significance [sig. (2-tailed)], and the large sample sizes (N), for best results. A strong relationship between most variables within organizations was identified with most correlation being more than 0.5, N= 101; and $p < .05$, which shows that the relationship between these factors was very solid. It is very important for a researcher to check the size of correlation coefficients. Values that ranges from -1.00 to 1.00 shows the relationship between variables, with 0 shows that there is no relationship, 1.0 perfect positive correlation, whereas -1.0 is perfect negative correlation.

Table: 7.4: Correlation Interpretation

Small	$r = .10$ to $.29$
Medium	$r = .30$ to $.49$
Large	$r = .50$ to 1.0

7.7 Validity

Validity can be defined as a degree by which the sample of test items characterises the content the test is intended to measure. Validity used by the researcher on this study will be by measuring the point in the way data will be collected, by also focusing on tools that characterises a concept, the best way to evaluate that content of measure is by focusing on ERP Specialists, further more by gathering ideas of academics/researchers and professionals in ERP. The researcher will also measure feedback per each section. Critical success factors to check if there is any technical dexterity with questions.

7.8 Ethical consideration

Respondents are not supposed to be linked to a certain question, therefore, the researcher make sure that all respondents and feedback was not related to an individual or a specific company but to the ERP system, and the use of it, and they were not forced to answer any questions at all. The study was also described. Questionnaires were also sent to UJ Committee, and permission was granted to continue with data collection.



7.9 Conclusion

The research methods used during the study of developing an integrated Enterprise Resources Planning framework for South African Clothing and Textile Industries have been presented. The study used mixed method approach to allow triangulation of data. For data collection the researcher used open and closed ended questionnaires. Research methods included, sampling size, data collection, data analysis, descriptive Analysis, factor analysis, exploratory reliability analysis; correlation, validity, and ethical considerations. The use of questionnaires was suitable, compared to interviews, because there was no need or verbal to put pressure on respondents to instruct them on how to answer. However, it was obvious that the lack of a personal interviewer restricted the researcher's ability to get more information. Furthermore, questionnaires were well designed, and easy to analyse, majority of ERP experts/ respondents understood those questions that is the reason why the response was remarkable.



CHAPTER 8: DATA ANALYSIS AND INTERPRETATION

8.1 Introduction

This chapter aims at analysing and discussing the research findings of this study. To date, the overall goal of the present study was to develop a novel integrated Enterprise Resources Planning framework for South African Clothing and Textile Industries. To meet the aim of this study, the researcher used both quantitative and qualitative as research methods to gather relevant data. Four types of company size were targeted: Micro enterprise; Small enterprise; Medium enterprise; and large enterprises. At least 119 respondents participated in the research survey of this study, out of which 101 experts in the field of Enterprise Resource Planning and 18 participants that were not familiar with the tool but were from clothing and textile industries. To this end, various analyses were conducted, hence this chapter is divided into three main sections. The chapter will discuss and analyse the results related to descriptive analysis; analysing the findings associated with reliability analysis; and also analyse the findings related to factor analysis.

8.2 Descriptive Analysis: Biographic Information (ERP specialists)

8.2.1 Respondents demographic

In this section, background information of the participants that took part in this study with regards to: What is your age? What is the highest qualification you have achieved? What is your current position? How many years' experience do you have in this sector? Which of the following best describe your business type? What is your business function? (If more than one, choose the main function); which of the following ERPs does your company use? For how long has your company been using the ERP chosen above? And did you use a different ERP before the one chosen above?

8.2.1.1 Respondents demographic per age group

The distribution of the sample in accordance with age group of respondents that participated in this study is presented in the Figure 8.1 below.

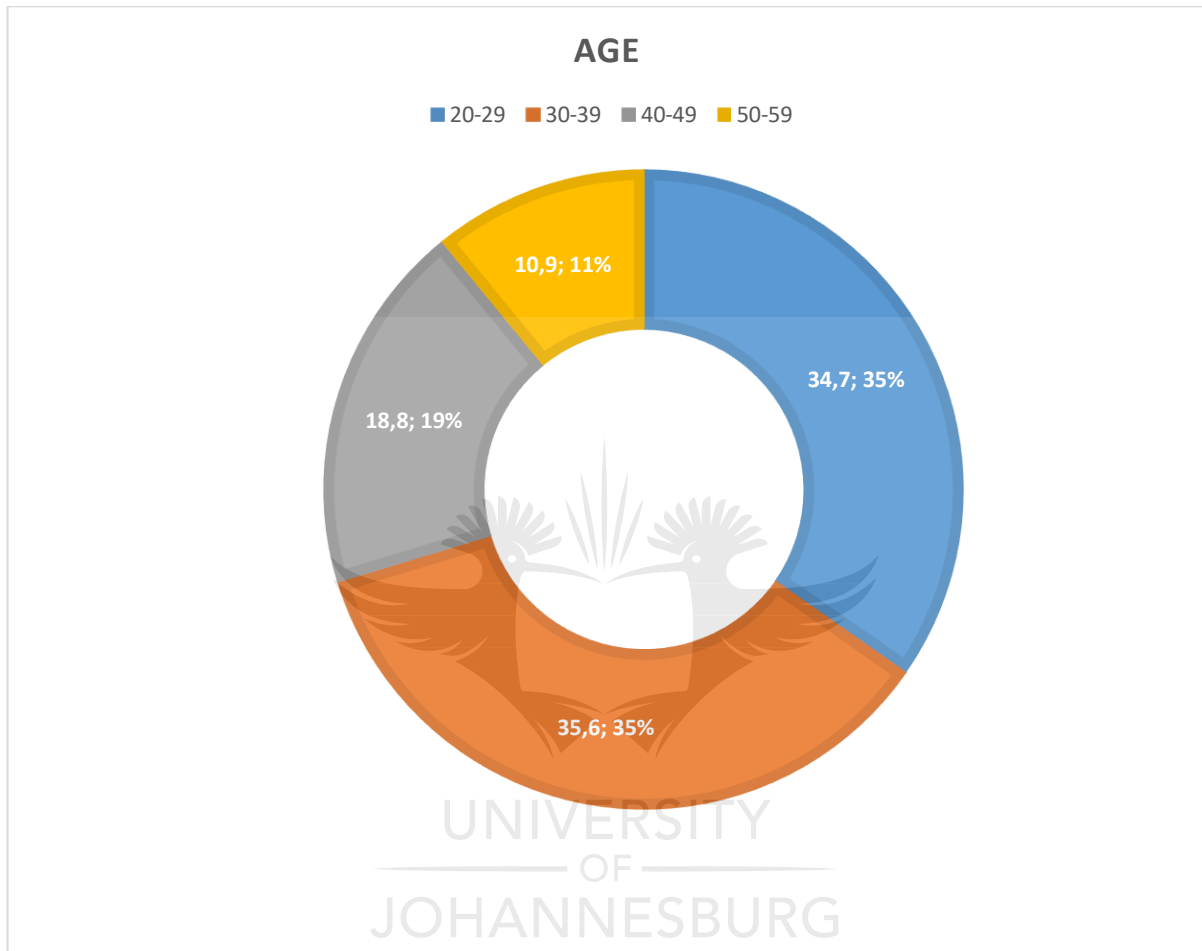


Figure 8.1: Distribution of sample by age group

From Figure 8.1 above, it can be observed that 34.7% of respondents that took part in this study were in the age group of 20-29 years. 35.6 % were between 30-39 year's old age group. Additionally, 18.8% of participants were in between 40-49 years old. Lastly, at least 10.9% of respondents were between 50-59 years old age group.

8.2.1.2 Respondents demographic per highest qualification

The distribution of the sample in accordance with respondents' highest qualification that participated in this study is presented in the Figure 8.2 below.

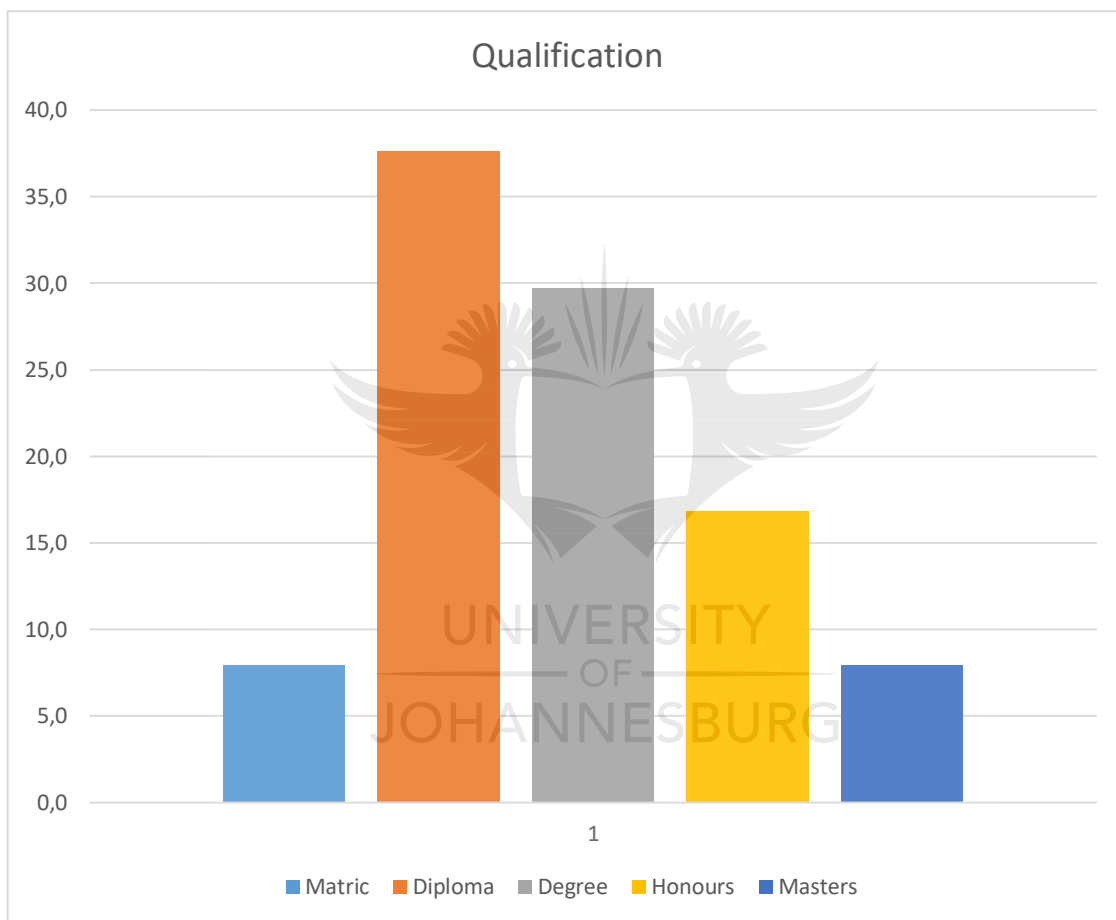


Figure 8.2: Distribution of sample per highest qualification

From the Figure 8.2 above, it can be seen that at least 7.9 % of respondents that took part in this study hold a Matric. Whilst, 37.6% of participants possess a Diploma, 29.7% of respondents hold a Degree, 16.8 % of participants possess Honours, and lastly 7.9% of respondents hold a Masters.

8.2.1.3 Respondents demographic per current position

The distribution of the sample in accordance with the current position of respondents that participated in this study is presented in the Figure 8.3 below.

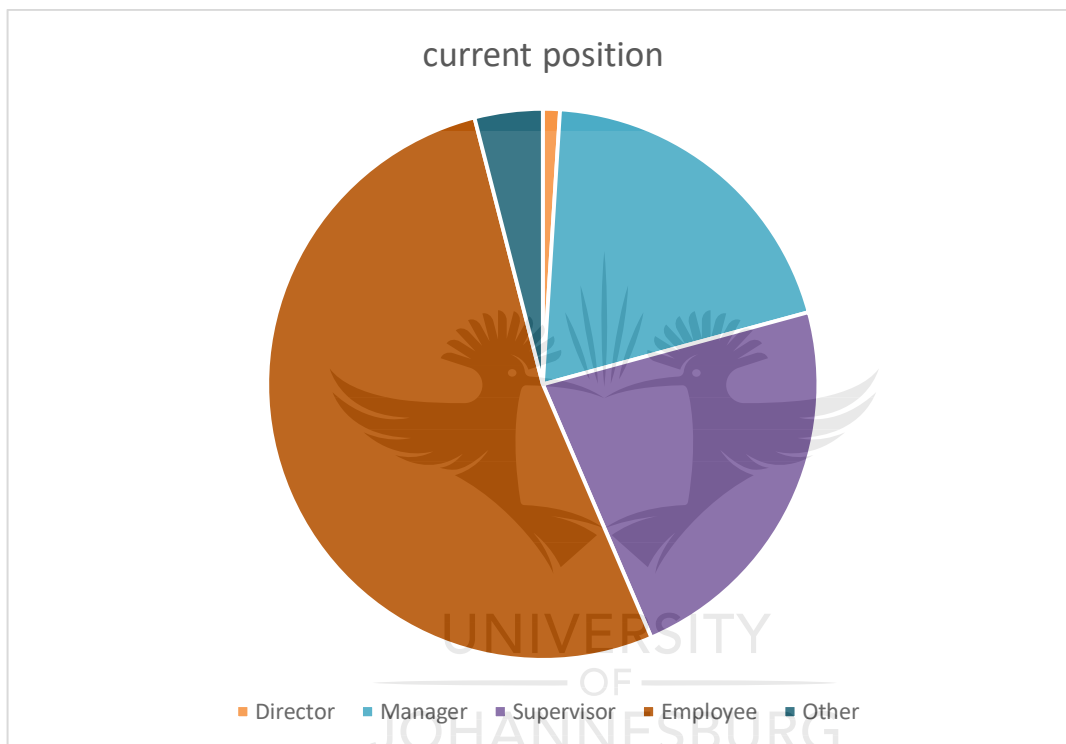


Figure 8.3: Respondents' current position

From the above Figure 8.3, it can be observed that 1.0% of respondents that took part in this study were directors, while 19.8% were managers. In addition, 22.8% of participants were supervisors, 55.5% were employees; lastly, at least 4.0% of respondents were "others".

8.2.1.4 Respondents per working experience

The distribution of the sample in accordance with respondents' working experience is presented in the Figure 8.4 below.

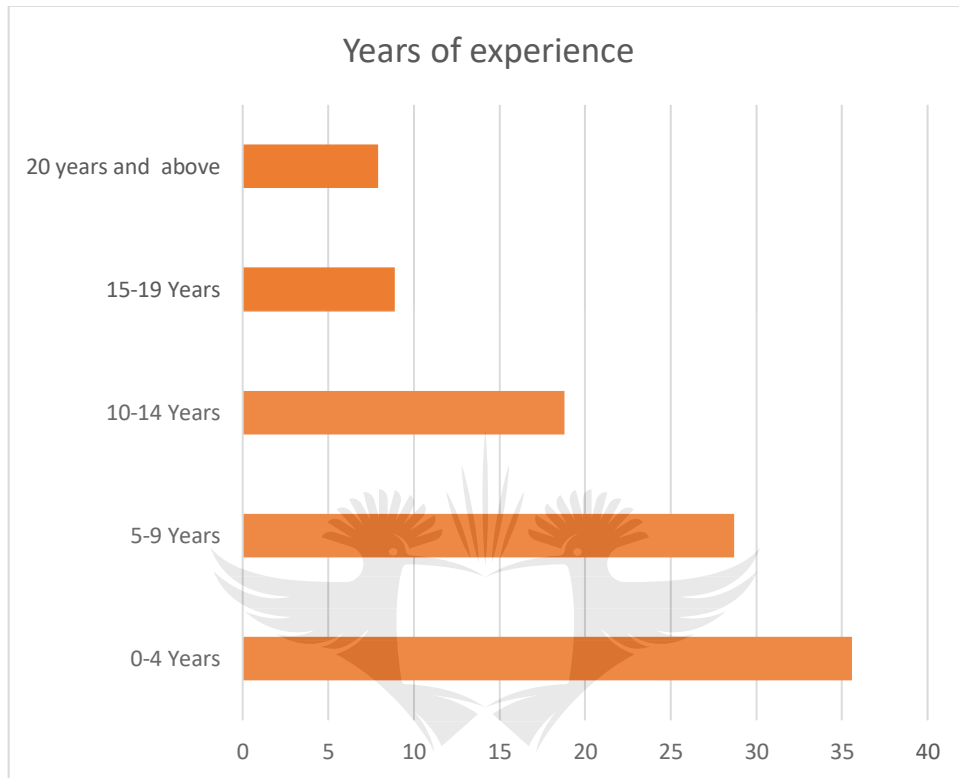


Figure 8.4: Respondents per working experience

From the Figure 8.4 above, it can be seen that at least 35.6 % of respondents that took part in this study have 0 to 4 years' experience. Whilst 28.7% of participants have 5 to 9 years, 18.8 % of respondents have 10 to 14 years, 8.9 % of participants have 15 to 19 years, and lastly 7.9 % have 20 years and above of working experience.

8.2.1.5 Respondents per business type

The distribution of the sample in accordance with the business type of respondents is presented in the Figure 8.5 below. It can be observed that 1.0 % of respondents that took part in this study were from Micro enterprise, 7.9 % were from small enterprise. Additionally, 28.7 % of participants were from medium enterprise, 59.4 % of respondents were from large enterprise, lastly at least 3.0 % is “other”.

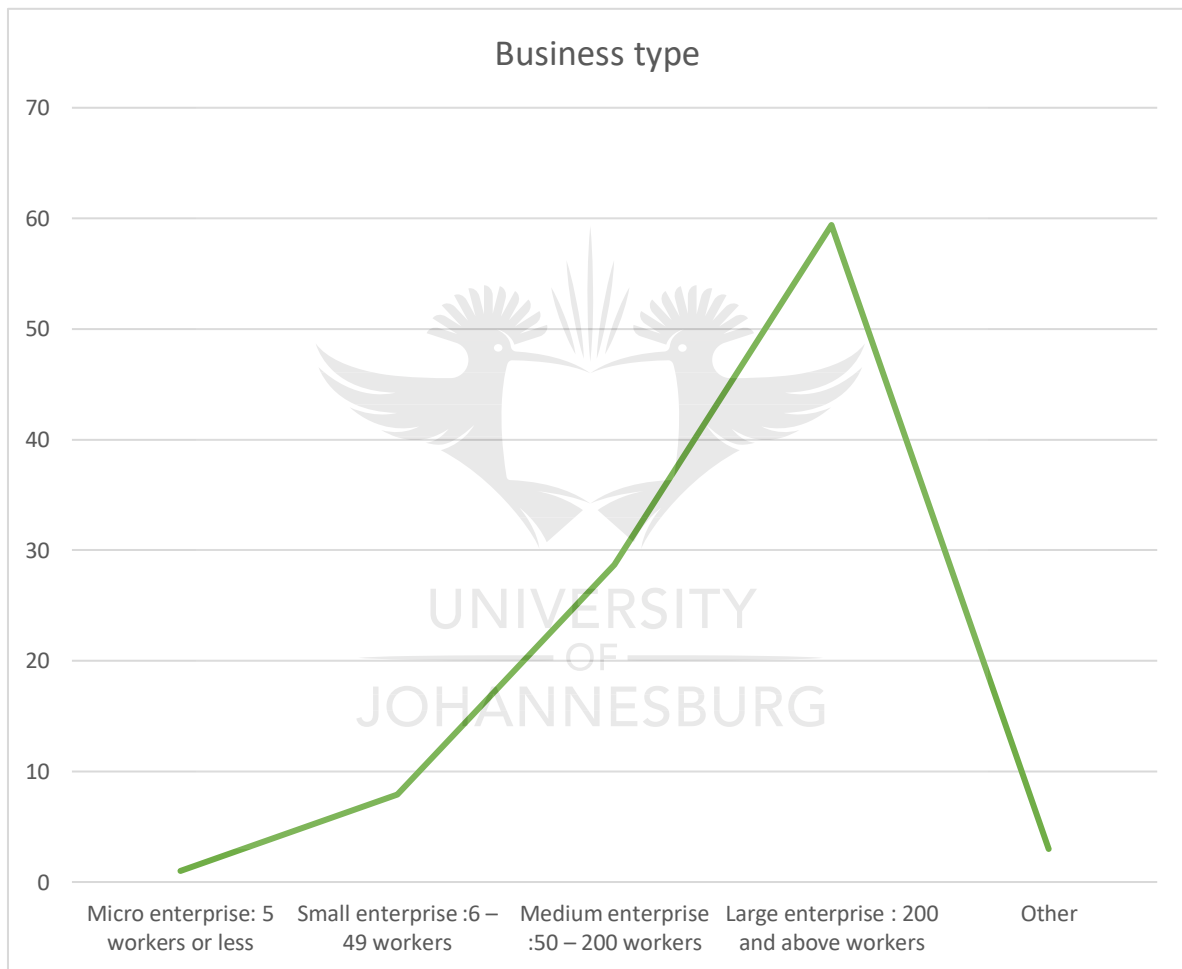


Figure 8.5: Respondents per business type

8.2.1.6 Respondents per business function

The distribution of the sample in accordance with the business function of respondents that participated in this study is presented in the Figure 8.6 below. It can be observed that 17.8 % of respondents that took part in this study were clients. 17.8 % were from finance. Additionally, 42.6 % of participants were from manufacturing, 7.9 % of respondents were from marketing, and lastly, at least 13.9 % is “other”.

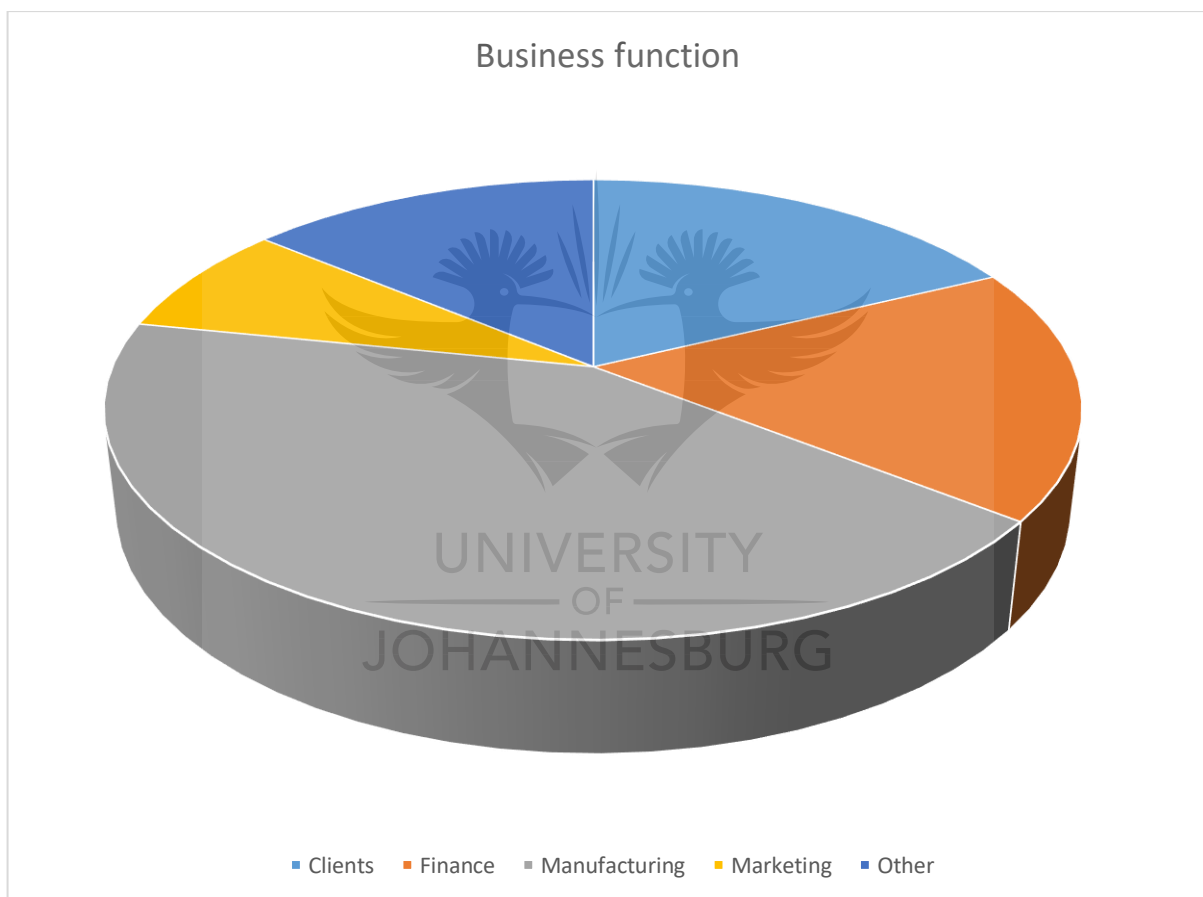


Figure 8.6: Respondents per business function

8.2.1.7 Respondents per ERP type

The distribution of the sample in accordance with the business type is presented in the Figure 8.7 below. It can be observed that 3.0 % of respondents that took part in this study were using JD Edwards whilst 12.9 % were using LN/Baan. Additionally, 5.9 % of participants were using Micro Dynamics, 17.8 % of respondents were using Oracle, 39.6 % SAP, 16.8 % SYSPRO, and lastly at least 4.0 % is “other”.

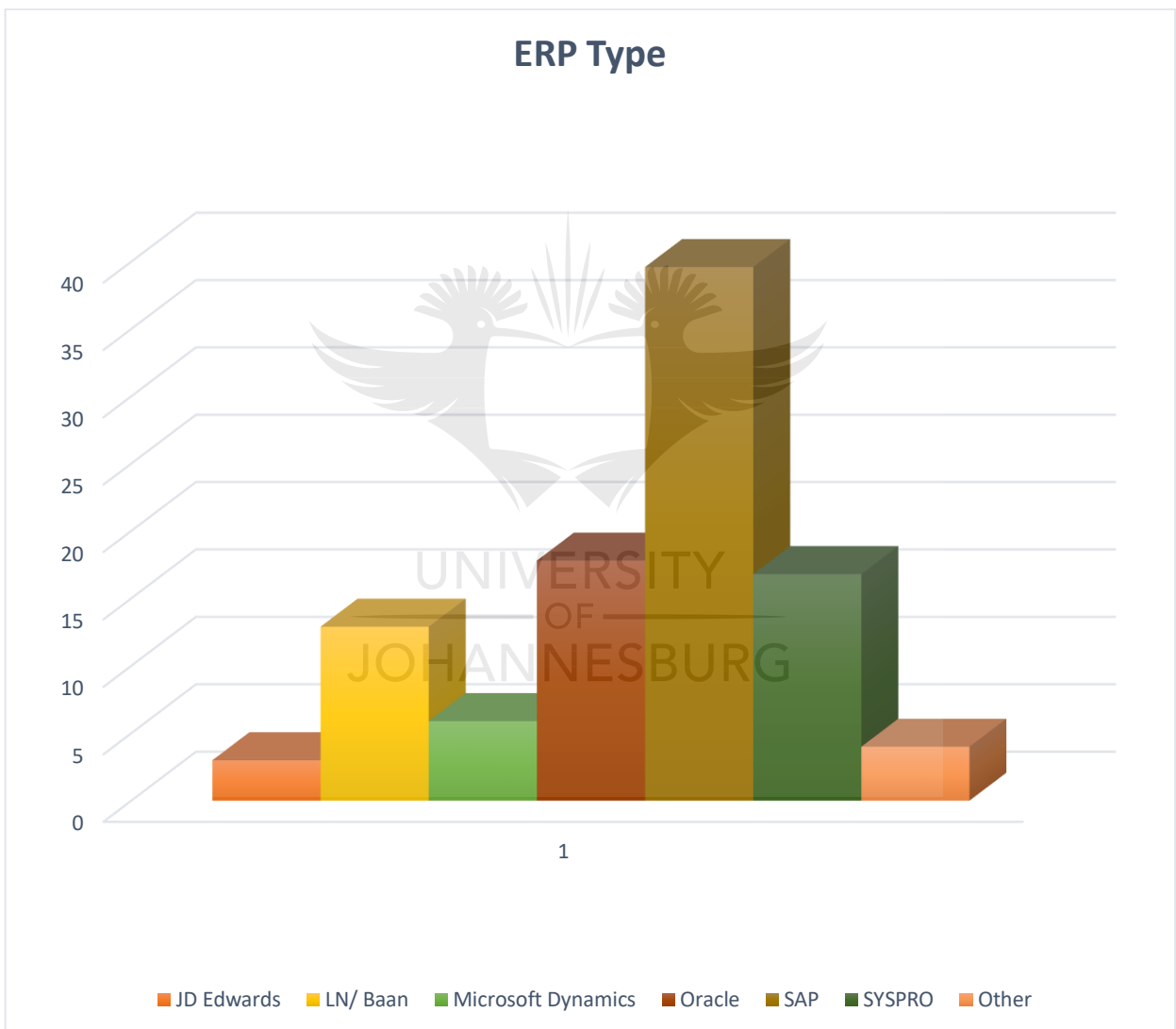


Figure 8.7: Respondents per business ERP Type

8.2.1.8 Respondents per ERP duration

The distribution of the sample in accordance with respondents' length of time using an ERP is presented in the Figure 8.8 below.

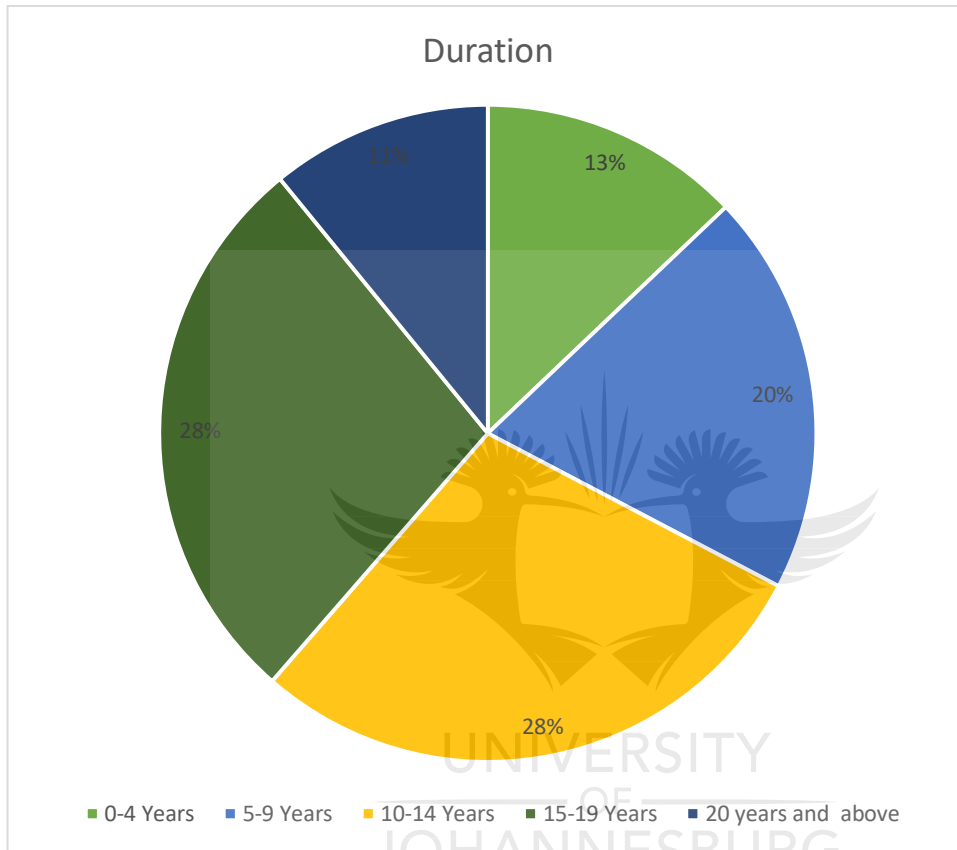


Figure 8.8: Duration of use of system per respondent.

From Figure 8.8 above, it can be seen that at least 12.9 % of respondents that took part in this study have been using ERP between 0 to 4 years' experience, while 19.8 % of participants used it between 5 to 9 years, 28.7 % of respondents between 10 to 14 years, 27.7 % of participants between 15 to 19 years, and lastly 10.9 % used ERP for 20 years and more.

8.2.1.9 Respondents per different ERP use

The distribution of the sample in accordance with the use of different ERP system besides the current one of respondents is presented in the Figure 8.9 below. It can be observed that 22.8 % of respondents that took part in this study used a different ERP before, while 75.2 % did not use different ERP before.

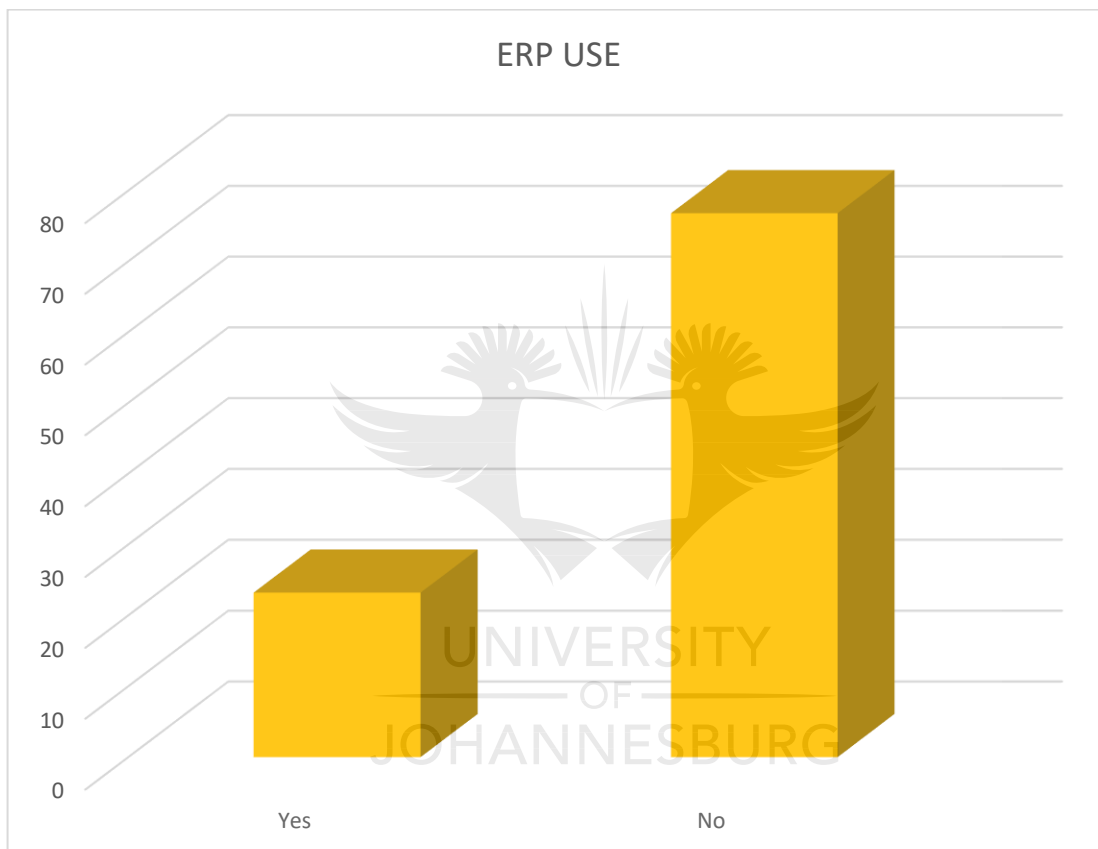


Figure 8.9: Respondents per different ERP use

8.3 Descriptive Statistics

8.3.1 Respondents per nine critical success factors

The tables under sections 8.3.1.1 to 8.3.1.9 below present item statistics *for nine* critical success factors, in different organizations.

8.3.1.1 Item Statistics: Vision and planning of Project.

Table 8.1: Vision and Planning of project

Items	Mean	Standard Deviation	Ranking
Improving strategic focus in the company.	3.85	0.845	1
Having a clear understanding of strategic goals.	3.80	0.829	2
Addressing the desired and expected gains from ERP business.	3.79	0.715	3
Selecting a knowledgeable consultant.	3.73	0.706	4
Having an obvious idea regarding the ERP plan.	3.69	0.734	5
Having a suitable budget for ERP projects.	3.69	0.761	5
Planning a new organizational structure to fit the movement of activities.	3.65	0.767	6

Table 8.1 shows the item statistics vision and planning of project that is one of the critical success factors considered in this study. To this end, the results reveal that of all items falling under the vision and planning of project, improving strategic focus in the company has been addressed as the most important with the mean of 3.85 and the standard deviation of 0.845; this is followed by having a clear understanding of strategic goals, as the second crucial with the mean of 3.80 and standard deviation of 0.829. This is followed by addressing the desired and expected gains from ERP business with the mean of 3.79 and standard deviation of 0.715; selecting a knowledgeable consultant, with the mean of 3.73 and standard deviation of 0.706, was ranked number 4, followed by having an obvious idea regarding the ERP plan, with the mean of 3.69 and standard deviation of 0.761; and having a suitable budget for ERP projects with the mean of 3.69 and standard deviation of 0.761, as shared ranked number 5. The last critical success factor was planning a new organizational structure to fit the movement of activities, have been addressed as number 3 with the mean of 3.65, and standard deviation of 0.767.

8.3.1.2 Item Statistics: Choice of an ERP system

Table 8.2: Choice of an ERP system

Items	Mean	Standard Deviation	Ranking
Having sufficient capacity to implement the ERP system	3.71	0.795	1
Testing carefully all existing systems.	3.64	0.795	2
Having a backup of dedicated specialists to assist in the ERP implementation system.	3.62	0.859	3
Setting standards to select the system.	3.60	0.776	3
Receiving presentation on particular ERP system by vendor.	3.55	0.793	5

The above table (8.2) shows the item statistics choice of ERP system considered in this study. To this end, the results reveal that, having sufficient capacity to implement the ERP system as the ranked the first crucial factor with the mean of 3.71 and standard deviation of 0.795. Followed by testing carefully all existing system, as the second crucial factor with the mean of 3.64 and standard deviation of 0.795. Setting standards to select the system, with the mean of 3.60 and standard deviation of 0.776, was ranked number three, followed by having a backup of dedicated specialists to assist in the ERP implementation system, with the mean of 3.62 and the standard deviation of 0.859. The last item was receiving presentations on particular ERP system by vendor, has a mean of 3.55, and standard deviation of 0.793.

8.3.1.3 Item Statistics: Support from Top Management

Table 8.3 below shows the item statistics support from top management that is one of the critical success factors considered in this study. To this end, the results reveal that, supporting the ERP project have been have been ranked as number one with a mean of 3.94 and standard deviation of 0.822. Distribution of resources for the ERP implementation with a mean of 3.92 and standard deviation of 0.783, was ranked number two, followed by discussing implementation progress with a mean of 3.90 and standard deviation of 0.806; appointing experts for project management have been addressed as number four with the mean of 3.85 and the standard deviation of 0.953; followed by establishing authorized guidelines, with a mean of 3.81 and standard deviation of 0.845. The last item ranked was correcting problems with the ERP implementation process, with a mean of 3.73 and standard deviation of 0.937.

Table 8.3: Support from Top Management

Items	Mean	Standard Deviation	Ranking
Supporting ERP project.	3.94	0.822	1
Distribution of resources for the ERP implementation.	3.92	0.783	2
Discussing implementation progress.	3.90	0.806	3
Appointing experts for project management.	3.85	0.953	4
Establishing authorized guidelines.	3.81	0.845	5
Correcting problems with the ERP implementation process.	3.73	0.937	5

8.3.1.4 Item Statistics: Project Management

Table 8.4 below shows the item statistics project management which is one of the critical success factors considered in this study. The results reveal that Managing the ERP project was ranked number one with a mean of 4.00 and standard deviation of 0.778 followed by Having good interpersonal skills was ranked the second with a mean of 3.96 and standard deviation of 0.828; Self-Evaluating performance was ranked third, with a mean of 3.86 and standard deviation of 0.821; followed by having a Good technical knowledge, have been addressed as the most crucial with a mean of 3.82 and the standard deviation of 0.850. Understanding corporate procedures, with a mean of 3.76 and standard deviation of 0.793, was ranked number five, followed by establishing suitable plans for ERP implementation with a mean of 3.74 and standard deviation of 0.774. And the least crucial item was communicating to workers as the fifth crucial one with a mean of 3.64 and a standard deviation of 0.823.

Table 8.4: Project Management

Items	Mean	Standard Deviation	Ranking
Managing the ERP project.	4.00	0.778	1
Having a good interpersonal skills.	3.96	0.828	2
Self -Evaluating performance.	3.86	0.821	3
Having a good technical knowledge	3.82	0.850	4
Understanding corporate procedures.	3.76	0.793	5
Establishing suitable plans for ERP implementation	3.74	0.774	6
Communicating to workers	3.64	0.823	7

8.3.1.5 Item Statistics: Project Champion

Table 8.5: Project Champion

Items	Mean	Standard Deviation	Ranking
Ensuring a successful implementation of an ERP system.	3.96	0.777	1
Assisting top management in project development.	3.81	0.748	2
Leading ERP projects.	3.79	0.782	3
Improving working condition for all employees.	3.78	0.824	4
Encouraging staff to adapt to ERP the system.	3.75	0.626	5
Being a good role model for the working conduct of staff.	3.70	0.810	6
Resolving problems related to ERP implementation	3.51	0.859	7

The above table shows the item statistics for Project Champion that is one of the critical success factors considered in this study. To this end, the results reveal that Ensuring a successful implementation of an ERP system, with a mean of 3.96 and standard deviation of 0.777, was ranked the highest followed by Assisting top management in project development, was ranked second with the mean of 3.81 and standard deviation of 0.748; the third item was Leading ERP projects, with a mean of 3.79 and standard deviation of 0.782; followed by Improving working condition for all employees as the fourth crucial one with a mean of 3.78 and standard deviation of 0.824. Encouraging staff to adapt to ERP the system, was ranked number five with a mean of 3.75 and standard deviation of 0.626, followed by Being a good role model for the working conduct of staff, with a mean of 3.70, and standard deviation of 0.81. The last ranked was, Resolving problems related to ERP implementation, have been addressed as the least important with a mean of 3.51 and standard deviation of 0.859.

8.3.1.6 Item Statistics: Business Process Re-engineering

Table 8.6: Business Process Re-engineering

Items	Mean	Standard Deviation	Ranking
Upgrading Information Technology infrastructure	3.75	0.833	1
Changing company procedures to fit the application of ERP system.	3.74	0.760	2
Achieving data accuracy.	3.72	0.959	3
Ensuring technical fit of the ERP system.	3.72	0.817	4
Improving the process of a business.	3.68	0.875	5
Completing changes in the organizational structure.	3.63	0.840	6
Changing the existing process by ERP Experts.	3.62	0.874	7

Table 8.6 above reveals the statistics for critical success factors in Business Process Re-engineering. The results show that Upgrading Information Technology infrastructure, with a mean of 3.75 and standard deviation of 0.833, was ranked first. Changing company procedures to fit the application of ERP system, with a mean of 3.74, and standard deviation of 0.760, was ranked number two, followed by Achieving data accuracy, which was ranked the third most crucial one with a mean of 3.72 and standard deviation of 0.959. Ensuring a technical fit of the ERP system, was ranked at number four, with a mean of 3.72 and standard deviation of 0.817. The fifth rank was improving the process of a business, with a mean of 3.68 and standard deviation of 0.875, followed by completing changes in the organizational structure, with a mean of 3.63 and standard deviation of 0.840 at number 6. The last ranked was Changing the existing process by ERP Experts, with a mean of 3.62 and standard deviation of 0.874.

8.3.1.7 Item Statistics: Communication

Table 8.7 below shows the item statistics communication that is one of the critical success factors considered in this study. To this end, the results reveal that, Sharing information related to ERP with stakeholders, was ranked the first a mean of 3.95 and standard deviation of 0.865. This was followed by communicating a clear implementation plan, with a mean of 3.92 and standard deviation of 0.744. Communicating the influence of the system on their employment conditions to the workers, was ranked third with a mean of 3.87 and standard deviation of 0.821, followed by Communicating the aims and objectives of the system to workers, as the fourth crucial with a mean of 3.84 and standard deviation of 0.838. Communicating the significance of the ERP system for the company to workers was ranked number fifth with a mean of 3.83 and standard deviation of 0.837, followed by Communicating

ERP system benefits to workers, as the lowest with the mean of 3.80 and the standard deviation of 0.906.

Table 8.7: Communication

Items	Mean	Standard Deviation	Ranking
Sharing information related to ERP with stakeholders.	3.95	0.865	1
Communicating a clear implementation plan.	3.92	0.744	2
Communicating the influence of the system on their employment conditions to the workers.	3.87	0.821	3
Communicating the aims and objectives of the system to workers.	3.84	0.838	4
Communicating the significance of the ERP system for the company to workers.	3.83	0.837	5
Communicating ERP system benefits to workers.	3.80	0.906	6

8.3.1.8 Item Statistics User Training and Education.

Table 8.8 below shows the item statistics shown on Choice of user training and education. To this end, the results reveal that, providing essential resources for training and development, with the mean of 4.05 and the standard deviation of 0.817, was ranked as first, followed by Recruiting a qualified implementation team, with a mean of 3.99 and standard deviation of 0.922; followed by Managing a training programme by ERP experts, with the mean of 3.96 and standard deviation of 0.799. Prioritizing training of ERP, was ranked fourth, with a mean of 3.88 and standard deviation of 0.909; followed by Involving of workers in the ERP training programme which was ranked number 5 with a mean of 3.83 and standard deviation of 0.788. Planning training and education programs for end-users, with the mean of 3.82 and standard deviation of 0.699, was ranked sixth, followed by providing intensive training on the ERP system to all workers was number seven with a mean of 3.76, and standard deviation of 0.873.

Table 8.8: User Training and Education

Items	Mean	Standard Deviation	Ranking
Providing essential resources for training and development.	4.05	0.817	1
Recruiting a qualified implementation team.	3.99	0.922	2
Managing a training programme by ERP experts.	3.96	0.799	3
Prioritizing training of ERP	3.88	0.909	4
Involving of workers in the ERP training programme.	3.83	0.788	5
Planning training and education programs for end-users	3.82	0.699	6
Providing intensive training on the ERP system to all workers.	3.76	0.873	7

8.3.1.9 Item Statistics Organizational Resistance

Table 8.9: Organizational Resistance

Items	Mean	Standard Deviation	Ranking
Ensuring strategic fit of the ERP in the organization.	3.81	0.706	1
Addressing organizational resistance to the implementation of ERP.	3.76	0.838	2
Providing change management in the organization.	3.69	0.834	3
Having top management address resistance from workers.	3.57	0.817	4
Informing workers regarding the significance of the ERP system.	3.56	0.793	5
Involving workers in the new business procedures	3.45	0.830	6
Preparing workers for the change	3.42	0.778	7

The above table (8.9) shows the item statistics Organisational Resistance. To this end, the results reveal that, Ensuring strategic fit of the ERP in the organization, with a mean of 3.81 and standard deviation of 0.706, was ranked as first, followed by Addressing organizational resistance to the implementation of ERP, with a mean of 3.76 and standard deviation of 0.838. Providing Change management in the organization, was ranked third with a mean 3.69 and standard deviation of 0.834; Having top management address resistance from workers, with the mean of 3.57 and standard deviation of 0.817, was ranked fourth, followed by, Informing workers regarding the significance of the ERP system, with a mean of 3.56 and standard deviation of 0.793. Involving workers in the new business procedures, was ranked number six

with a mean of 3.45 and standard deviation of 0.830; followed by Preparing workers for the change, with a mean of 3.42 and standard deviation of 0.778 which was ranked as seventh.

8.3.2 Measuring quality of implementation and outcome

Table 8.10: the rating of the quality of implementation of the ERP system in a company.

		Frequency	Valid Percent	Cumulative Percent
Valid	Poor	3	3.0	3.0
	Average	15	14.9	17.8
	Good	69	68.3	86.1
	Excellent	14	13.9	100.0
	Total	101	100.0	

From Table 8.10 above, with responded rating the quality of implementation of the ERP system in their companies it can be observed that majority (68.3%) rated good, 14.9 % were average, 13.9 percent were excellent, and only 3.0 % of respondents that took part in this study rated poor.



Figure 8.10: Customer's satisfaction

From the above figure, respondents were asked, how satisfied is the company with the ERP system it has implemented? It can be observed that majority (49.5%) were satisfied, 22.8 % were neither satisfied nor dissatisfied, and 27.7 % of the respondent were very satisfied.

Table 8.11: Use the ERP adopted by a company.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Difficult	3	3.0	3.0	3.0
	Neither difficult nor easy	36	35.6	35.6	38.6
	Easy	47	46.5	46.5	85.1
	Very easy	15	14.9	14.9	100.0
	Total	101	100.0	100.0	

Table 8.11 provide feedback on, how easy is it to use the ERP adopted by respondent's company. It can be seen that 46.5 % of the respondent find the system easy, 35.6% said it was neither difficult nor easy, 14.9% found it very easy , and only 3.0% found if difficult .



8.3.2.1 List of attributes for information used in the company: Rating the quality of each information attribute BEFORE implementation of the ERP system.

Table: 8.12: Statistics of attributes before implementation

Lists of attributes	Mean	Standard Deviation	Ranking
Before Quantity of information	3.10	0.611	1
Before Quality of information	3.10	0.614	1
Before Relevance of information	3.10	0.732	1
Before Accuracy of information	3.01	0.718	2
Before Reliability of information	3.00	0.778	3
Before Timeliness of information	2.99	0.732	4

The above table (8.12) shows the item statistics List of attributes for information used in the company: Rating the quality of each information attribute **BEFORE** implementation of the ERP system, considered in this study. To this end, the results reveal that, Before Quantity of information, with a mean of 3.10 and standard deviation of 0.611, Before Quality of information with a mean of 3.10 and standard deviation of 0.614, and Before Relevance of information, with a mean of 3.10 and standard deviation of 0.732, was ranked number one, followed by, Before Accuracy of information, ranked as the second most crucial with a mean of 3.01 and standard deviation of 0.718. Before Reliability of information, was ranked number three with a mean of 3.00 and the standard deviation of 0.778; Ranking number five was Before Timeliness of information, with the mean of 2.99, and standard deviation of 0.732.

8.3.2.2 List of attributes for information used in the company: Rating the quality of each attribute AFTER implementation of the ERP system.

Table: 8.13: Statistics of attributes AFTER ERP implementation

Lists of attributes	Mean	Standard Deviation	Ranking
After Timeliness of information	4.35	0.685	1
After Accuracy of information	4.35	0.713	1
After Reliability of information	4.32	0.706	2
After Relevance of information	4.29	0.739	3
After Quality of information	4.20	0.725	4
After Quantity of information	4.12	0.725	5

Table 8.13 shows the item statistics List of attributes for information used in the company: Rating the quality of each information attribute, after implementation of the ERP system considered in this study. To this end, the results reveal that, After Timeliness of information with a mean of 4.35 and standard deviation of 0.685, and After Accuracy of information, with a mean 4.35 and standard deviation of 0.713, was ranked number one. Followed by, After Reliability of information, with the mean of 4.32 and standard deviation of 0.706. After Relevance of information was ranked number three with the mean of 4.29 and standard deviation of 0.739; Followed by, After Quality of information mean of 4.20 standard deviation of 0.725; the last ranked was After Quantity of information with a mean of 4.12 and standard deviation of 0.725 respectively.

8.3.2.3 List of factors relevant to a company. Rating the quality of each factor BEFORE implementation of the ERP system.

The table below (Table 8.14) shows total number of respondents (100%) before the implementation of the ERP system, based on the list of factors relevant to a company.

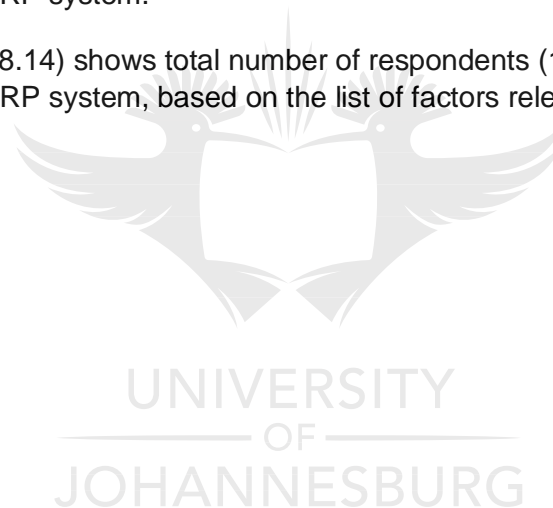


Table: 8.14: Total number of respondents BEFORE implementation of the ERP system

		Very Poor	Poor	Average	Good	Excellent	Total
Communication between the company and suppliers	Count	2	10	50	36	2	100
	%	2.0%	10.0%	50.0%	36.0%	2.0%	100.0%
Communication between the company and ERP vendors	Count	3	13	47	34	3	100
	%	3.0%	13.0%	47.0%	34.0%	3.0%	100.0%
Communication between the company and other partners	Count	2	10	55	31	2	100
	%	2.0%	10.0%	55.0%	31.0%	2.0%	100.0%
The business relationship between the company and suppliers	Count	1	17	48	32	2	100
	%	1.0%	17.0%	48.0%	32.0%	2.0%	100.0%
The business relationship between the company and ERP vendors	Count	4	23	41	29	3	100
	%	4.0%	23.0%	41.0%	29.0%	3.0%	100.0%
The business relationship between the company and other partners	Count	3	29	41	23	4	100
	%	3.0%	29.0%	41.0%	23.0%	4.0%	100.0%
Satisfaction of top management	Count	2	30	48	18	1	99
	%	2.0%	30.3%	48.5%	18.2%	1.0%	100.0%
Satisfaction of project managers	Count	6	30	44	17	3	100
	%	6.0%	30.0%	44.0%	17.0%	3.0%	100.0%
Satisfaction of employees	Count	7	26	54	12	1	100
	%	7.0%	26.0%	54.0%	12.0%	1.0%	100.0%
Efficiency of processes	Count	7	25	47	19	1	99
	%	7.1%	25.3%	47.5%	19.2%	1.0%	100.0%
Amount of waste generated by the company	Count	8	27	45	16	3	99
	%	8.1%	27.3%	45.5%	16.2%	3.0%	100.0%
Cash flow	Count	5	18	56	16	3	98
	%	5.1%	18.4%	57.1%	16.3%	3.1%	100.0%
Market share	Count	4	18	49	26	1	98
	%	4.1%	18.4%	50.0%	26.5%	1.0%	100.0%
Value added productivity	Count	4	18	53	20	3	98
	%	4.1%	18.4%	54.1%	20.4%	3.1%	100.0%
Profitability achieved by the company	Count	1	17	52	26	2	98
	%	1.0%	17.3%	53.1%	26.5%	2.0%	100.0%
Turnover achieved by the company	Count	2	13	59	19	4	97
	%	2.1%	13.4%	60.8%	19.6%	4.1%	100.0%

Table: 8.15: Factors Statistics **before** ERP implementation

Item	Mean	Std. deviation	Ranking
Communication between the company and suppliers	3.26	0.747	1
Before Communication between the company and ERP vendors.	3.21	0.820	2
Before Communication between the company and other partners	3.21	0.729	2
Before The business relationship between the company and suppliers	3.17	0.766	3
Before Profitability achieved by the company	3.11	0.745	4
Before Turnover achieved by the company	3.10	0.757	5
Before The business relationship between the company and ERP vendors	3.04	0.898	6
Before Market share	3.02	0.812	7
Before Value added productivity	3.00	0.825	8
Before The business relationship between the company and other partners	2.96	0.898	9
Before Cash flow	2.94	0.823	10
Before Satisfaction of top management	2.86	0.769	11
Before Satisfaction of project managers	2.81	0.895	12
Before Efficiency of processes	2.82	0.861	13
Before Amount of waste generated by the company	2.79	0.918	14
Before Satisfaction of employees	2.74	0.799	15

Table 8.15 shows the list of factors relevant to a company. Rating the quality of each factor **before** implementation of the ERP system: Factors Statistics considered in this study. To this end, the results reveal that, Communication between the company and suppliers, was ranked number 1, with a mean of 3.26 and standard deviation of 0.747; Before Communication between the company and ERP vendors, with a mean of 3.21 and standard deviation of 0.820, and Communication between the company and other partners with a mean of 3.21 and standard deviation of 0.729, were ranked number 2; followed by, Before The Business relationship between the company and suppliers, with a mean of 3.17 and standard deviation of 0.766; Profitability achieved by the company, was ranked number 4, with a the mean of 3.11 and standard deviation of 0.745, followed by Turnover achieved by the company, with a mean of 3.10 and standard deviation of 0.757.

The business relationship between the company and ERP vendors, was ranked number 6, with a mean of 3.04 and standard deviation of 0.898; Market share, ranked number seven with a mean of 3.02 and standard deviation of 0.812; followed by Value added productivity, with the mean of 3.00 and standard deviation of 0.825. Ranking number nine is The business relationship between the company and other partners, with the mean of 2.96 and standard

deviation of 0.898; followed by, Cash flow, with the mean of 2.94 and standard deviation of 0.823; Satisfaction of top management, was ranked number 11, with a mean of 2.86 and standard deviation 0.769 followed by Satisfaction of project managers, with a mean of 2.81 and standard deviation of 0.895. Efficiency of processes, was ranked number 13 with the mean of 2.82 and standard deviation of 0.861; Amount of waste generated by the company, was ranked number 14 with the mean of 2.79, and standard deviation of 0.918 was ranked number 14; and the last ranking (number 15) was, Satisfaction of employees, with a mean of 2.74 and standard deviation of 0.799.

8.3.2.4 List of factors relevant to a company. Rating the quality of each factor AFTER implementation of the ERP system:

The table below shows total number of respondents (100%) after the implementation of the ERP system, based on the list of factors relevant to a company.



Table: 8.16: Total number of respondents AFTER implementation of the ERP system

Item		Very Poor	Poor	Average	Good	Excellent	Total
Communication between the company and suppliers	Count			6	55	40	101
	%			5.9%	54.5%	39.6%	100.0%
Communication between the company and ERP vendors	Count		1	6	49	45	101
	%		1.0%	5.9%	48.5%	44.6%	100.0%
Communication between the company and other partners	Count			5	53	43	101
	%			5.0%	52.5%	42.6%	100.0%
The business relationship between the company and suppliers	Count			10	50	40	100
	%			10.0%	50.0%	40.0%	100.0%
The business relationship between the company and ERP vendors	Count		1	9	46	44	100
	%		1.0%	9.0%	46.0%	44.0%	100.0%
The business relationship between the company and other partners	Count			7	46	46	99
	%			7.1%	46.5%	46.5%	100.0%
Satisfaction of top management	Count		1	10	45	43	99
	%		1.0%	10.1%	45.5%	43.4%	100.0%
Satisfaction of project managers	Count			10	48	41	99
	%			10.1%	48.5%	41.4%	100.0%
Satisfaction of employees	Count		2	13	53	33	101
	%		2.0%	12.9%	52.5%	32.7%	100.0%
Efficiency of processes	Count		2	10	50	39	101
	%		2.0%	9.9%	49.5%	38.6%	100.0%
Amount of waste generated by the company	Count		2	13	51	33	99
	%		2.0%	13.1%	51.5%	33.3%	100.0%
Cash flow	Count		1	10	46	41	98
	%		1.0%	10.2%	46.9%	41.8%	100.0%
Market share	Count	1	1	14	41	42	99
	%	1.0%	1.0%	14.1%	41.4%	42.4%	100.0%
Value added productivity	Count		4	8	43	44	99
	%		4.0%	8.1%	43.4%	44.4%	100.0%
Profitability achieved by the company	Count		1	10	41	47	99
	%		1.0%	10.1%	41.4%	47.5%	100.0%
Turnover achieved by the company	Count		1	7	41	48	97
	%		1.0%	7.2%	42.3%	49.5%	100.0%

Table: 8.17: Factors Statistics **AFTER** ERP implementation

Item	Mean	Std. deviation	Ranking
Communication between the company and ERP vendors	4.73	0.644	1
Turnover achieved by the company	4.40	0.672	2
The business relationship between the company and other partners	4.39	06.20	3
Communication between the company and other partners,	4.38	0.581	4
Profitability achieved by the company	4.35	0.704	5
Communication between the company and suppliers	4.34	0.588	6
The business relationship between the company and ERP vendors	4.33	0.682	7
Satisfaction of top management	4.31	0.695	8
The business relationship between the company and suppliers	4.30	0.644	9
Cash flow	4.30	0.692	9
Value added productivity	4.28	0.873	10
Efficiency of processes	4.25	0.713	11
Market share	4.23	0.806	12
Satisfaction of employees	4.16	0.717	13
Amount of waste generated by the company	4.16	0.724	13
Satisfaction of project managers	4.13	0.649	14

Table 8.17 shows the list of factors relevant to a company. Rating the quality of each factor AFTER implementation of the ERP system Factors Statistics Considered in this study. To this end, the results reveal that, Communication between the company and ERP vendors was ranked number one with a mean of 4.73 and standard deviation 0.644; followed by, Turnover achieved by the company, with a mean of 4.40 and standard deviation of 0.672; The business relationship between the company and other partners, was ranked three from the last with a mean of 4.39, and standard deviation of 0.620; followed by Communication between the company and other partners, with a mean of 4.38 and standard deviation of 0.581. Number five was Profitability achieved by the company, with a mean of 4.35, and standard deviation of 0.704; followed by Communication between the company and suppliers, was ranked second last with a mean of 4.34 and standard deviation of 0.588; Ranking number seven was, The business relationship between the company and ERP vendors, with a mean of 4.33, and

standard deviation of 0.682 followed by Satisfaction of top management, with a mean of 4.31, and standard deviation of 0.695.

The business relationship between the company and suppliers, with a mean of 4.30, and standard deviation 0.644, and Cash flow, with a mean of 4.30, and standard deviation of 0.692, was ranked number 9; followed by Value added productivity with a mean of 4.28, and standard deviation of 0.873. Ranking number eleven was Efficiency of processes, with a mean of 4.25, and standard deviation of 0.713; Market share was ranked number 12 with a mean of 4.23 and the standard deviation of 0.806. Satisfaction of employees, with a mean of 4.16, and standard deviation of 0.717; and Amount of waste generated by the company with a mean of 4.16, and standard deviation of 0.724, was ranked number 13; and the last ranking was Satisfaction of project managers, with a mean of 4.13, and standard deviation of 0.649.

8.4 Factor Analysis 8.4.1 Results from ERP Critical Success Factors

Sections 8.4.1.1 to 8.4.1.9 discuss results for factor analysis for all nine critical success factors on an ERP system.

8.4.1.1 Results from Vision and planning of Project.

The results for vision and planning of the project from the critical success factors are illustrated in Figure 8.11 and Tables 8.18 to 8.21. Total of seven variables are listed as follows: ERP2.1.1 planning a new organizational structure to fit the movement of activities; ERP2.1.2 addressing the desired and expected gains from ERP business; ERP2.1.3 selecting a knowledgeable consultant; ERP2.1.4 having an obvious idea regarding the ERP plan; ERP2.1.5 having a suitable budget for ERP projects; ERP2.1.6 having a clear understanding of strategic goals; and ERP2.1.7 improving strategic focus in the company.

The suitable data for factor analysis was considered before conducting or performing the principal component analysis (PCA). As illustrated in Table 8.18 the correlation matrix discovered the existence of coefficients of more than 0.3. KMO is acceptable and it is suggested as good because it achieved a value of 0.796, which is more than a recommended value of 0.6. In addition, Bartlett's Test of Sphericity was considered appropriate and it is statistically significant, with significant value of 0.000, which is less than 0.05, as illustrated in Table 8.19. As indicated in Table 8.21 (factor matrix) 1 factor with eigenvalue was used at a high value of more than 1.0, as it is also indicated in Figure 8.11 (Scree plot), the level of eigenvalue. As indicated in Table 8.20, the total variance described by the factor was 59.191%.

Table: 8.18: Correlation Matrix

		ERP2.1.1	ERP2.1.2	ERP2.1.3	ERP2.1.4	ERP2.1.5	ERP2.1.6	ERP2.1.7
Correlation	ERP2.1.1	1.000	0.720	0.488	0.414	0.401	0.451	0.495
	ERP2.1.2	0.720	1.000	0.711	0.557	0.370	0.452	0.490
	ERP2.1.3	0.488	0.711	1.000	0.637	0.366	0.479	0.469
	ERP2.1.4	0.414	0.557	0.637	1.000	0.615	0.487	0.461
	ERP2.1.5	0.401	0.370	0.366	0.615	1.000	0.640	0.530
	ERP2.1.6	0.451	0.452	0.479	0.487	0.640	1.000	0.755
	ERP2.1.7	0.495	0.490	0.469	0.461	0.530	0.755	1.000

Table: 8.19: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.796
Bartlett's Test of Sphericity	Approx. Chi-Square	385.313
	df	21
	Sig.	0.000

Table: 8.20: Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.143	59.191	59.191	3.672	52.462	52.462
2	0.973	13.902	73.093			
3	0.698	9.967	83.059			
4	0.512	7.317	90.377			
5	0.274	3.913	94.289			
6	0.205	2.927	97.216			
7	0.195	2.784	100.000			

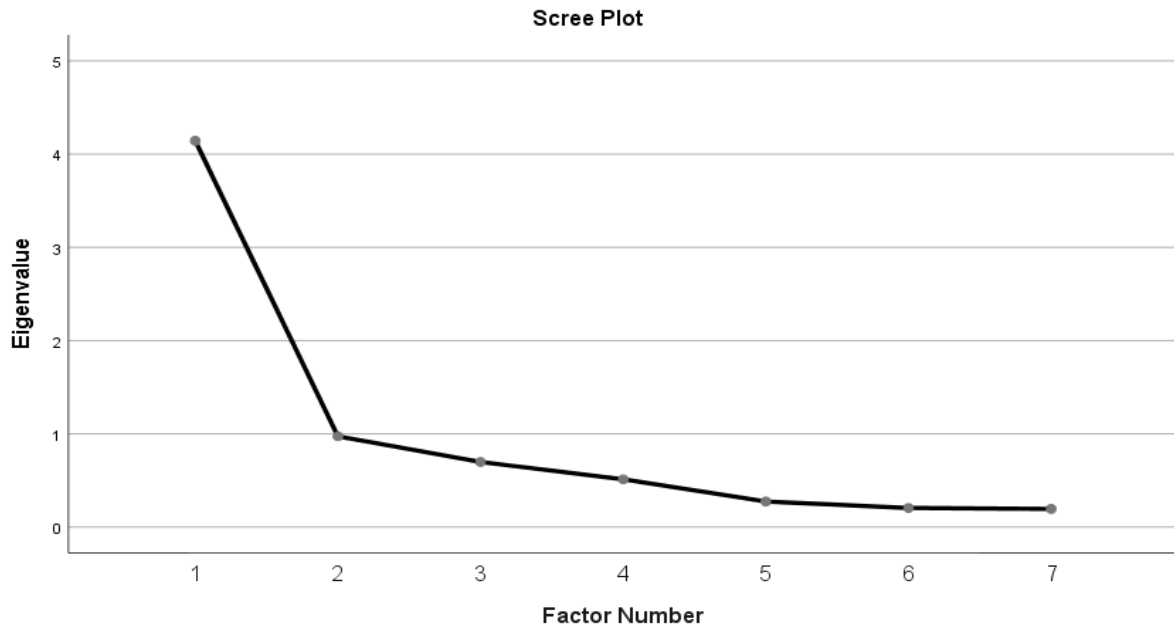


Figure: 8.11: Scree plot for vision and planning of the project

Table 8.21: Factor Matrix

	Factor
	1
Addressing the desired and expected gains from ERP business.	0.766
Having a clear understanding of strategic goals.	0.755
Improving strategic focus in the company.	0.740
Selecting a knowledgeable consultant.	0.730
Having an obvious idea regarding the ERP plan.	0.729
Planning a new organizational structure to fit the movement of activities.	0.680
Having a suitable budget for ERP projects.	0.664

As indicated in the above table: 8.21 (Factor matrix), seven variable for vision and planning factors were: Addressing the desired and expected gains from ERP business (76.6%), Having a clear understanding of strategic goals (75.5%), Improving strategic focus in the company (74.0%), Selecting a knowledgeable consultant (73.0%), Having an obvious idea regarding the ERP plan (72.9%), Planning a new organizational structure to fit the movement of activities (68.0%) and Having a suitable budget for ERP projects (66.4%). The Vision and planning factor is accounted for a total cumulative variance of 52%.

8.4.1.2 Results from Choice of an ERP system

The results for Choice of an ERP system from the critical success factors are illustrated in Figure 8.12 and Table 8.22 to 8.25. Total of five variables are listed as follows: ERP2.2.1 Receiving presentation on particular ERP system by vendor; ERP2.2.2 Having a backup of dedicated specialists to assist in the ERP implementation system; ERP2.2.3 Testing carefully all existing system; ERP2.2.4 Setting standards to select the system; and ERP2.2.5 Having sufficient capacity to implement the ERP system.

The suitable data for factor analysis was considered before conducting or performing the PCA. As illustrated in Table 8.22 the correlation matrix discovered the existence of coefficients of more than 0.3. KMO is acceptable and it is regarded as good because it achieved a value of 0.684, which is more than a recommended value of 0.6. In addition, Bartlett's Test of Sphericity was considered appropriate and it is statistically significant, with significant value of 0.000, which is less than 0.05, as illustrated in Table 8.23. which backs up the correlation matrix.

As indicated in table 8.25 (Rotated factor matrix) 2 factors with eigenvalue was used at a high value of more than 1.0, as it is also indicated in figure 7.12 (Scree plot). Table 8.20 showed, the total variance described by each factor are the factor 1 was (51.24 %). And factor 2: (23.14%. The two factors are accounted for a total cumulative variance of 60%.

Table 8.22: Correlation Matrix

		ERP2.2.1	ERP2.2.2	ERP2.2.3	ERP2.2.4	ERP2.2.5
Correlation	ERP2.2.1	1.000	0.571	0.358	0.238	0.243
	ERP2.2.2	0.571	1.000	0.442	0.230	0.196
	ERP2.2.3	0.358	0.442	1.000	0.544	0.409
	ERP2.2.4	0.238	0.230	0.544	1.000	0.649
	ERP2.2.5	0.243	0.196	0.409	0.649	1.000

Table 8.23: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.684
Bartlett's Test of Sphericity	Approx. Chi-Square	150.082
	df	10
	Sig.	0.000

Table 8.24: 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	2.562	51.246	51.246	2.187	43.732	43.732	1.641	32.817	32.817
2	1.157	23.141	74.387	0.834	16.689	60.421	1.380	27.604	60.421
3	0.567	11.342	85.729						
4	0.398	7.962	93.691						
5	0.315	6.309	100.000						

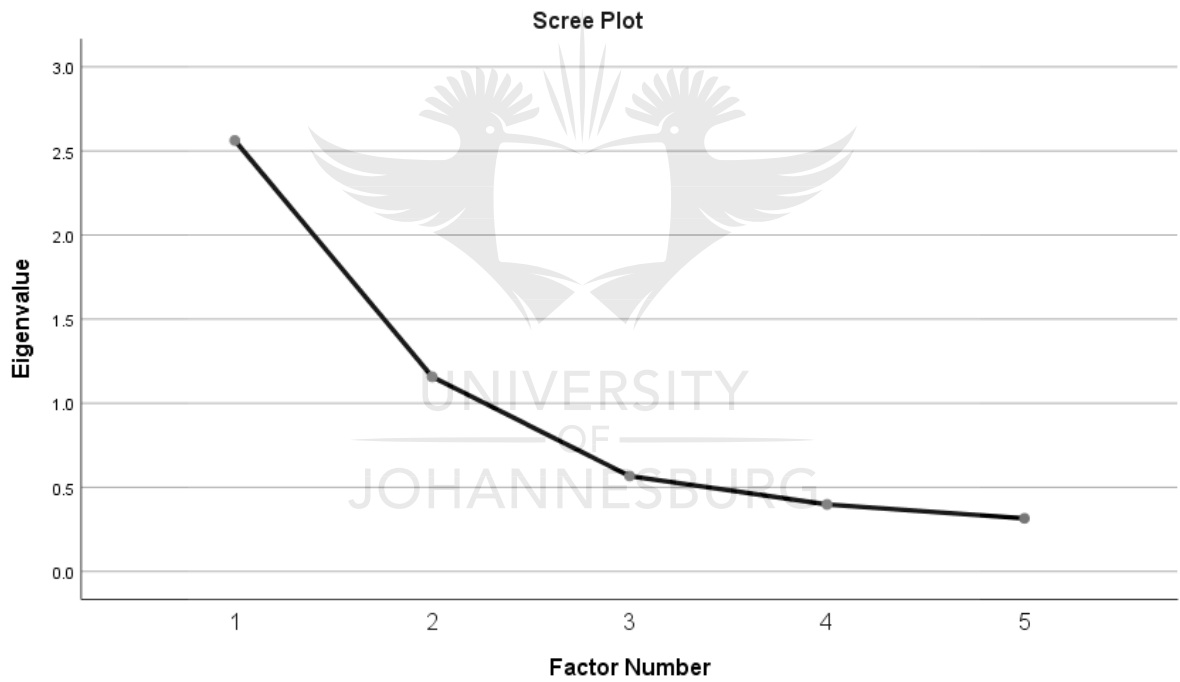


Figure: 8.12: Scree plot for choice of an ERP system

Table 8.25: Rotated Factor Matrix

	Factor	
	1	2
Setting standards to select the system.	0.932	
Having sufficient capacity to implement the ERP system	0.676	
Testing carefully all existing system.	0.518	
Having a backup of dedicated specialists to assist in the ERP implementation system.		0.870
Receiving presentation on particular ERP system by vendor.		0.631

As indicated in Table 8.25 It is discovered that there are two factors with eigenvalue of more than 1. The following descriptions were created in order to examine relationships between variables under each factor: Factor 1: Strategic decision- making, and Factor 2: strategic operational process. These factors were named based on the examining of each variable amongst each factor. Variables for choice of an ERP system factors were discussed as follows:

Factor 1. Strategic decision-making: Setting standards to select the system (93.2%), having sufficient capacity to implement the ERP system (67.6%), and Testing carefully all existing systems (51.8%). The factor has a total variance of 51.24%.

Factor 2. Strategic operational process. Having a backup of dedicated specialists to assist in the ERP implementation system (87.0 %), and Receiving presentation on particular ERP system by vendor (0.631%). The factor has a total variance of 23.14%.

8.4.1.3 Results from Support from Top Management

The results for support from Top management of the critical success factors are illustrated in Figure 8.13 and Table 8.26 to 8.29. Total of six variables are listed as follows: ERP2.3.1 Discussing implementation progress; ERP2.3.2 Correcting problems with the ERP implementation process; ERP2.3.3 Appointing experts for project management; ERP2.3.4 Distribution of resources for the ERP implementation; ERP2.3.5 Establishing authorized guidelines; and ERP2.3.6 Supporting ERP project.

The suitable data for factor analysis was considered before conducting or performing the PCA. As illustrated in Table 8.26 the correlation matrix discovered the existence of coefficients of more than 0.3. KMO is acceptable and it is suggested as good because it achieved a value

of 0.858, which is more than a recommended value of 0.6. As illustrated in Table 8.27 In addition Bartlett's Test of Sphericity was considered appropriate and it is statistically significant, with significant value of 0.000, which is less than 0.05 .One factor with eigenvalue was used at a high value of more than 1.0, in Table 8.29 (factor matrix), and in Figure 8.13 (Scree plot).As indicated in Table 8.28, the total variance described by the factor was (66.2 %).

Table 8.26: Correlation Matrix

		ERP2.3.1	ERP2.3.2	ERP2.3.3	ERP2.3.4	ERP2.3.5	ERP2.3.6
Correlation	ERP2.3.1	1.000	0.600	0.501	0.542	0.515	0.474
	ERP2.3.2	0.600	1.000	0.650	0.638	0.630	0.550
	ERP2.3.3	0.501	0.650	1.000	0.721	0.499	0.537
	ERP2.3.4	0.542	0.638	0.721	1.000	0.672	0.645
	ERP2.3.5	0.515	0.630	0.499	0.672	1.000	0.717
	ERP2.3.6	0.474	0.550	0.537	0.645	0.717	1.000

Table 8.27: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.858
Bartlett's Test of Sphericity	Approx. Chi-Square	342.547
	df	15
	Sig.	0.000

Table 8.28: Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.973	66.221	66.221	3.581	59.678	59.678
2	0.621	10.349	76.570			
3	0.543	9.051	85.620			
4	0.365	6.091	91.712			
5	0.290	4.831	96.543			
6	0.207	3.457	100.000			

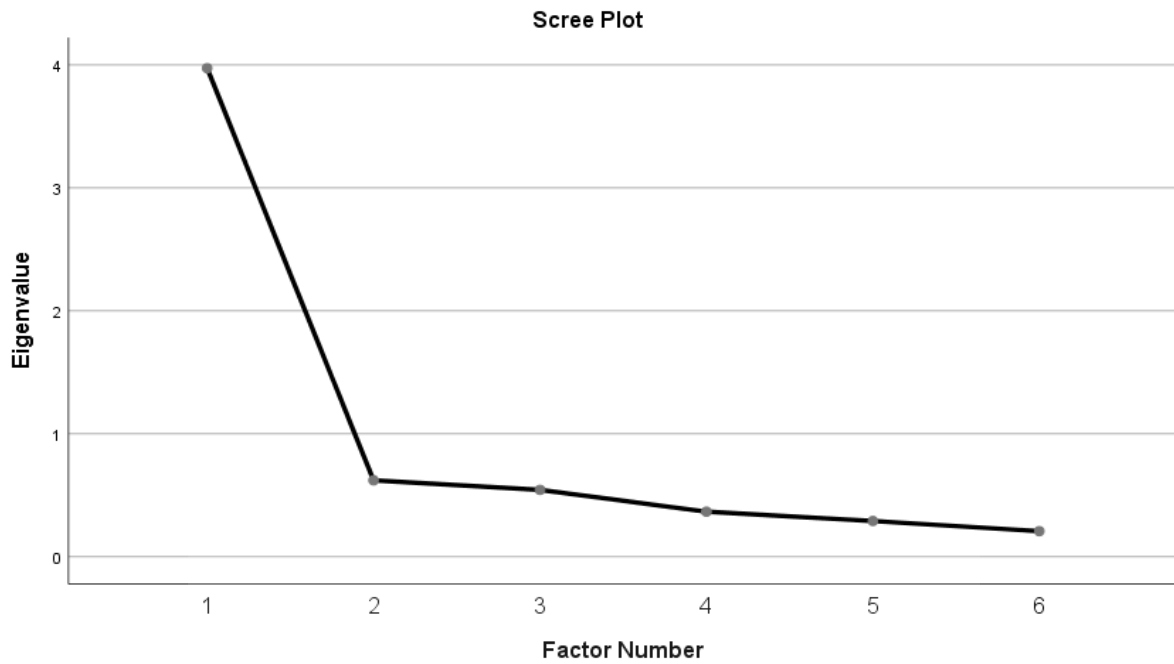


Figure 8.13: Scree plot for support from top management

Table 8.29: Factor Matrix

	Factor
	1
Distribution of resources for the ERP implementation.	0.854
Correcting problems with the ERP implementation process.	0.799
Establishing authorized guidelines.	0.793
Supporting ERP project.	0.758
Appointing experts for project management.	0.754
Discussing implementation progress.	0.665

As indicated in the above Table: 8.29 (Factor matrix), six variables for Support from Top Management were: Distribution of resources for the ERP implementation (85.4%), Correcting problems with the ERP implementation process (79.9%), Establishing authorized guidelines (79.3%), Supporting ERP project (75.8%), Appointing experts for project management (75.4%), and Discussing implementation progress (66.5%). The Support from top management factor has a total cumulative variance of 59.7%.

8.4.1.4 Results from Project Management

The results for Project Management from the critical success factors are illustrated in figure 8.14 and Tables 8.30 to 8.33. A total of seven variables are listed as follows: ERP2.4.1 establishing suitable plans for ERP implementation; ERP2.4.2 communicating with workers; ERP2.4.3 Understanding corporate procedures; ERP2.4.4 Having a good technical knowledge; ERP2.4.5 Having a good interpersonal skills; ERP2.4.6 Self-Evaluating performance; and ERP2.4.7 Managing the ERP project.

The suitable data for factor analysis was considered before conducting or performing the PCA. As illustrated in Table 8.30, the correlation matrix identified the existence of coefficients of more than 0.3. KMO is acceptable and it is suggested as good because it achieved a value of 0.756, which is higher than a recommended value of 0.6. Bartlett's Test of Sphericity was considered appropriate and it is statistically significant, with significant value of 0.000, which is less than 0.05, as illustrated in Table 8.31.

As indicated in Table 8.33 (Rotated factor matrix) 2 factors with eigenvalue was used at a high value of more than 1.0, and it is also indicated in Figure 8.14 (Scree plot). The total variance described by each factor are the factor 1 was (50.210 %). And factor 2 (16.09%) as indicated in Table 8.32.

Table 8.30: Correlation Matrix

		ERP2.4.1	ERP2.4.2	ERP2.4.3	ERP2.4.4	ERP2.4.5	ERP2.4.6	ERP2.4.7
Correlation	ERP2.4.1	1.000	0.439	0.324	0.260	0.275	0.328	0.412
	ERP2.4.2	0.439	1.000	0.572	0.471	0.480	0.274	0.358
	ERP2.4.3	0.324	0.572	1.000	0.614	0.443	0.313	0.137
	ERP2.4.4	0.260	0.471	0.614	1.000	0.679	0.405	0.298
	ERP2.4.5	0.275	0.480	0.443	0.679	1.000	0.565	0.462
	ERP2.4.6	0.328	0.274	0.313	0.405	0.565	1.000	0.595
	ERP2.4.7	0.412	0.358	0.137	0.298	0.462	0.595	1.000

Table 8.31: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.756
Bartlett's Test of Sphericity	Approx. Chi-Square	272.995
	df.	21
	Sig.	0.000

Table 8.32: 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	3.515	50.210	50.210	3.088	44.109	44.109	2.113	30.187	30.187
2	1.126	16.090	66.300	0.807	11.529	55.638	1.782	25.451	55.638
3	0.883	12.613	78.913						
4	0.498	7.110	86.023						
5	0.428	6.115	92.138						
6	0.325	4.647	96.785						
7	0.225	3.215	100.000						

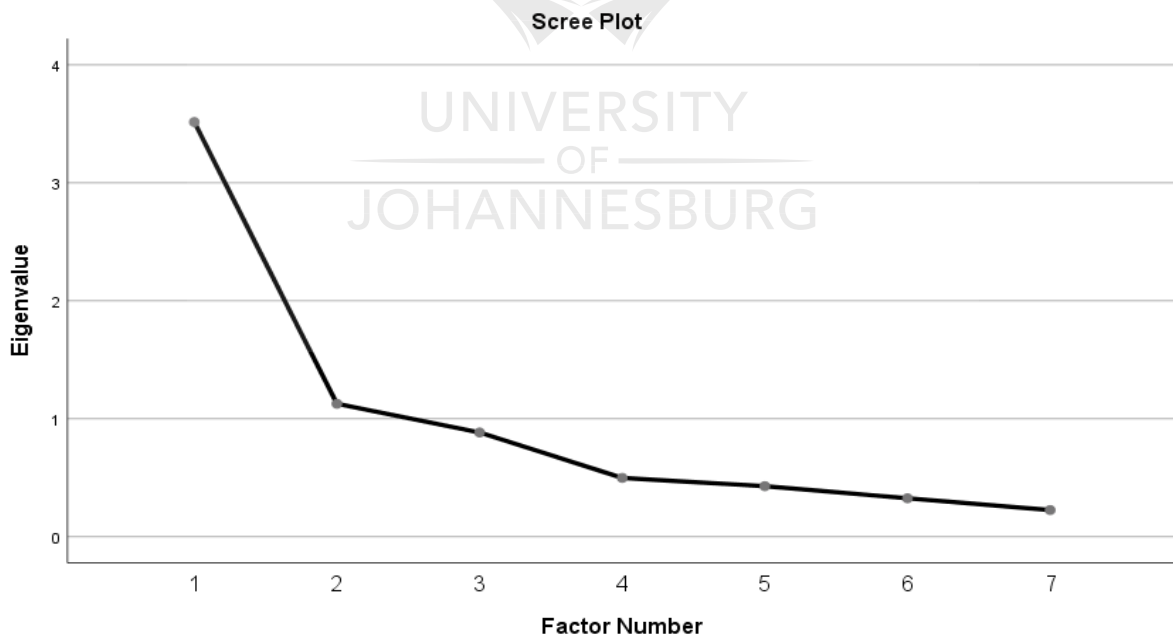


Figure 8.14: Scree plot for project management

Table 8.33: Rotated Factor Matrix

	Factor	
	1	2
Understanding corporate procedures.	0.819	
Having a good technical knowledge.	0.734	
Communicating to workers.	0.610	
Having a good interpersonal skill.	0.582	
Managing the ERP project.		0.894
Self -Evaluating performance.		0.645
Establishing suitable plans for ERP implementation.		0.386

Table 8.33 showed that there are 2 factors with eigenvalue of more than 1. The following descriptions were created in order to examine relationships between variables under each factor: Factor 1: System operational procedure and Factor 2: Performance measurement. These factors were named based on the examining of every variable amongst each factor.

Variables for project management factors were discussed as follows: **Factor 1. System operational procedure:** Understanding corporate procedures (81.9%), Having a good technical knowledge (73.4%), Communicating to workers (61.0%), and Having good interpersonal skills (58.2%). The factor is accounted for a total variance of 50.210%. **Factor 2. Performance measurement:** Managing the ERP project (89.4%), Self-Evaluating performance (64.5%), and Establishing suitable plans for ERP implementation (38.6%). The factor is accounted for a total variance of 16.090%. The two factors are accounted for a total cumulative variance of 55.6%.

8.4.1.5 Results from Project Champion

The results for Project champion from the critical success factors are illustrated in Figure 8.15 and Tables 8.34 to 8.37. Total of seven variables are listed as follows: ERP2.5.1 Resolving problems related to ERP implementation; ERP2.5.2 Being a good role model for the working conduct of staff; ERP2.5.3 Assisting top management in project development; ERP2.5.4 Leading ERP projects; ERP2.5.5 Encouraging staff to adapt to ERP the system; ERP2.5.6 Improving working condition for all employees; and ERP2.5.7 Ensuring a successful implementation of an ERP system.

The suitable data for factor analysis was considered before conducting or performing the PCA. As illustrated in Table 8.34, the correlation matrix discovered the existence of coefficients of

more than 0.3. KMO is acceptable and it is suggested as good because it achieved a value of 0.684, which is greater than a recommended value of 0.6. Bartlett's Test of Sphericity was considered appropriate and it is statistically significant, with significant value of 0.000, which is less than 0.05, as indicated in Table 8.35.

Table 8.37 (Rotated factor matrix) two factors with eigenvalue was used at a high value of more than 1.0, and it is showed in Figure 8.15 (Scree plot). The total variance described by each factor are Factor 1 was (41.552%). Factor 2 (18.024) as indicated in Table 8.36.

Table 8.34: Correlation Matrix

		ERP2.5 .1	ERP2.5 .2	ERP2.5 .3	ERP2.5 .4	ERP2.5 .5	ERP2.5. 6	ERP2.5. 7
Corr elati on	ERP2.5.1	1.000	0.382	0.404	0.281	0.108	0.360	0.318
	ERP2.5.2	0.382	1.000	0.538	0.362	0.169	0.082	0.125
	ERP2.5.3	0.404	0.538	1.000	0.518	0.156	0.259	0.334
	ERP2.5.4	0.281	0.362	0.518	1.000	0.449	0.194	0.351
	ERP2.5.5	0.108	0.169	0.156	0.449	1.000	0.343	0.270
	ERP2.5.6	0.360	0.082	0.259	0.194	0.343	1.000	0.586
	ERP2.5.7	0.318	0.125	0.334	0.351	0.270	0.586	1.000

Table 8.35: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.684
Bartlett's Test of Sphericity	Approx. Chi-Square	189.207
	Df	21
	Sig.	0.000

Table 8.36: 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	2.909	41.552	41.552	2.396	34.228	34.228	1.673	23.904	23.904
2	1.262	18.024	59.576	0.830	11.863	46.091	1.553	22.188	46.091
3	0.989	14.133	73.709						
4	0.631	9.010	82.719						
5	0.517	7.386	90.105						
6	0.398	5.684	95.789						
7	0.295	4.211	100.000						



Figure 8.15 Scree plot for project champion

Table 8 .37: Rotated Factor Matrix

	Factor	
	1	2
Assisting top management in project development.	0.751	
Being a good role model for the working conduct of staff.	0.707	
Leading ERP projects.	0.571	
Resolving problems related to ERP implementation.	0.432	
ERP2.5.6 Improving working condition for all employees.		0.832
ERP2.5.7 Ensuring a successful implementation of an ERP system.		0.690
ERP2.5.5 Encouraging staff to adapt to ERP the system.		0.372

Table 8.37 showed that there are 2 factors with eigenvalue of more than 1. The following descriptions were created in order to examine relationships between variables under each factor: Factor 1: system implementation management and Factor 2: Promoting system familiarisation. These factors were named based on the examining of every variable amongst each factor.

Variables for project champion factors were discussed as follows: **Factor 1. System implementation management:** Assisting top management in project development (75.1%), Being a good role model for the working conduct of staff (70.7%), Leading ERP projects (57.1%), and Resolving problems related to ERP implementation (43.2%). The factor accounted for a total variance of 41.552%. **Factor 2. Promoting system familiarisation:** Improving working condition for all employees (83.2%), Ensuring a successful implementation of an ERP system (69.0%), and Encouraging staff to adapt to ERP the system (37.2%). The factor accounted for a total variance of 18.024%, and the two factors accounted for a total cumulative variance of 46 %.

8.4.1.6 Results from Business Process Re-engineering

The results for Business Process Re-engineering from the critical success factors are illustrated in figure 8.16 and Table 8.38 to 8.41. Total of seven variables are listed as follows: ERP2.6.1 Changing the existing process by ERP Experts; ERP2.6.2 Completing changes in the organizational structure; ERP2.6.3 Changing company procedures to fit the application of ERP system; ERP2.6.4 Upgrading Information Technology infrastructure; ERP2.6.5 Improving the process of a business; ERP2.6.6 Achieving data accuracy; and ERP2.6.7 Ensuring technical fit of the ERP system.

The suitable data for factor analysis was considered before conducting the PCA. Table 8.38 indicated the correlation matrix of the existence of coefficients of more than 0.3. KMO is suggested as adequate because it achieved a value of 0.769, which is higher than a recommended value of 0.6. As indicated in Table 8.39. Bartlett's Test of Sphericity was considered appropriate and it is statistically significant, with significance value of 0.000, which is less than 0.05.

Table 8.41 (Rotated factor matrix) showed that two factors with eigenvalue was used at a high value of more than 1.0, and it is also showed in Figure 8.16 (Scree plot). The total variance described by each factor are the factor 1 was 53.89 %. Also Factor 2 16.995% as indicated in Table 8.40

Table 8 .38: Correlation Matrix

		ERP2.6.1	ERP2.6.2	ERP2.6.3	ERP2.6.4	ERP2.6.5	ERP2.6.6	ERP2.6.7
Correlation	ERP2.6.1	1.000	0.660	0.486	0.511	0.361	0.419	0.368
	ERP2.6.2	0.660	1.000	0.626	0.343	0.367	0.327	0.344
	ERP2.6.3	0.486	0.626	1.000	0.448	0.361	0.303	0.393
	ERP2.6.4	0.511	0.343	0.448	1.000	0.541	0.428	0.382
	ERP2.6.5	0.361	0.367	0.361	0.541	1.000	0.722	0.619
	ERP2.6.6	0.419	0.327	0.303	0.428	0.722	1.000	0.681
	ERP2.6.7	0.368	0.344	0.393	0.382	0.619	0.681	1.000

Table 8.39: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.769
Bartlett's Test of Sphericity	Approx. Chi-Square	321.669
	Df	21
	Sig.	0.000

Table 8.40: 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	3.773	53.895	53.895	3.389	48.409	48.409	2.227	31.821	31.821
2	1.190	16.995	70.890	0.850	12.136	60.545	2.011	28.724	60.545
3	0.652	9.314	80.204						
4	0.534	7.634	87.838						
5	0.377	5.385	93.224						
6	0.272	3.884	97.108						
7	0.202	2.892	100.000						

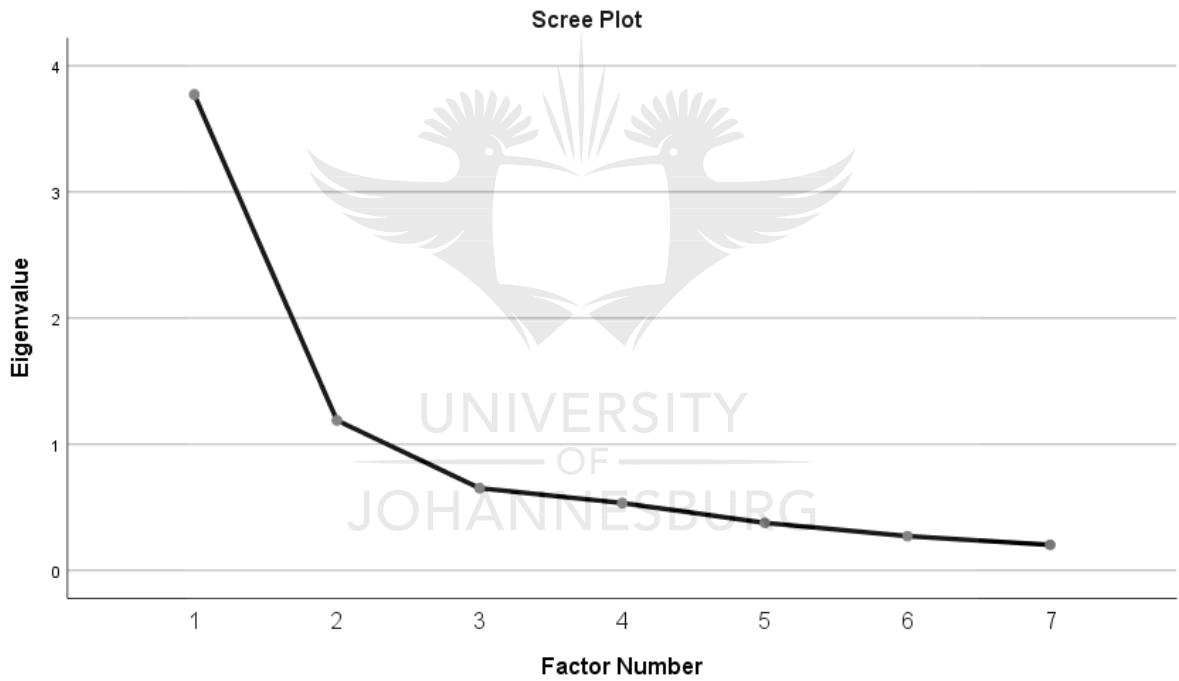


Figure 8.16: Scree plot for Business Process Re-engineering

Table 8 .41: Rotated Factor Matrix

	Factor	
	1	2
Achieving data accuracy.	0.845	
Improving the process of a business.	0.805	
Ensuring technical fit of the ERP system.	0.702	
Upgrading Information Technology infrastructure	0.451	
Completing changes in the organizational structure.		0.830
Changing the existing process by ERP Experts.		0.709
Changing company procedures to fit the application of ERP system.		0.673

Table 8.41 indicated that there are two factors with an eigenvalue of more than 1. The following descriptions were created in order to examine relationships between all variables under each factor: Factor 1. System testing condition and Factor 2: Organisational change, these factors were named based on the examining of every variable. Variables for choice of an ERP system factors were discussed as follows:

Factor 1. System testing condition: Achieving data accuracy 84.5%, improving the process of a business 80.5%, Ensuring technical fit of the ERP system 70.2%, and Upgrading Information Technology infrastructure 45.1%. The factor is accounted for a total variance of 53.895%. **Factor 2. Organisational change:** Completing changes in the organizational structure 83.0%, Changing the existing process by ERP Experts 70.9%, and Changing company procedures to fit the application of ERP system 67.3%.The factor is accounted for a total variance of 16.995%.The two factors are accounted for a total cumulative variance of 60.5%.

8.4.1.7 Results from Communication

The results for communication from the critical success factors are illustrated in Figure 8.17 and Table 8.42 to 8.45. Total of 6 variables were listed as follows: ERP2.7.1 Communicating ERP System benefits to workers; ERP2.7.2 Communicating the aims and objectives of the system to workers; ERP2.7.3 Communicating the influence of the system on their employment conditions to the workers; ERP2.7.4 Communicating the significance of the ERP system for the company to workers; ERP2.7.5 Communicating a clear implementation plan; and ERP2.7.6 Sharing information related to ERP with stakeholders.

Suitable data for factor analysis was considered before conducting or performing the PCA. As illustrated in table 8.42 the correlation matrix discovered the existence of coefficients of more than 0.3. KMO is suggested as suitable because it achieved a value of 0.827, which is more than a recommended value of 0.6. In addition, Bartlett's Test of Sphericity was considered appropriate and it is statistically significant, with significant value of 0.000, which is less than 0.05, as illustrated in Table 8.43.

As indicated in Table 8.45 (factor matrix) one factor with eigenvalue was used at a high value of more than 1.0, as it is also indicated in Figure 8.17 (Scree plot), the level of eigenvalue the total variance described by the factor was 67.381 %, as indicated in Table 8.44.

Table 8.42: Correlation Matrix

		ERP2.7.1	ERP2.7.2	ERP2.7.3	ERP2.7.4	ERP2.7.5	ERP2.7.6
Correlation	ERP2.7.1	1.000	0.845	0.726	0.591	0.466	0.562
	ERP2.7.2	0.845	1.000	0.766	0.639	0.479	0.489
	ERP2.7.3	0.726	0.766	1.000	0.722	0.495	0.587
	ERP2.7.4	0.591	0.639	0.722	1.000	0.560	0.517
	ERP2.7.5	0.466	0.479	0.495	0.560	1.000	0.631
	ERP2.7.6	0.562	0.489	0.587	0.517	0.631	1.000

Table 8.43: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.827
Bartlett's Test of Sphericity	Approx. Chi-Square	398.580
	Df	15
	Sig.	0.000

Table 8.44: Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.043	67.381	67.381	3.679	61.322	61.322
2	0.770	12.838	80.218			
3	0.464	7.726	87.944			
4	0.368	6.128	94.072			
5	0.220	3.663	97.736			
6	0.136	2.264	100.000			

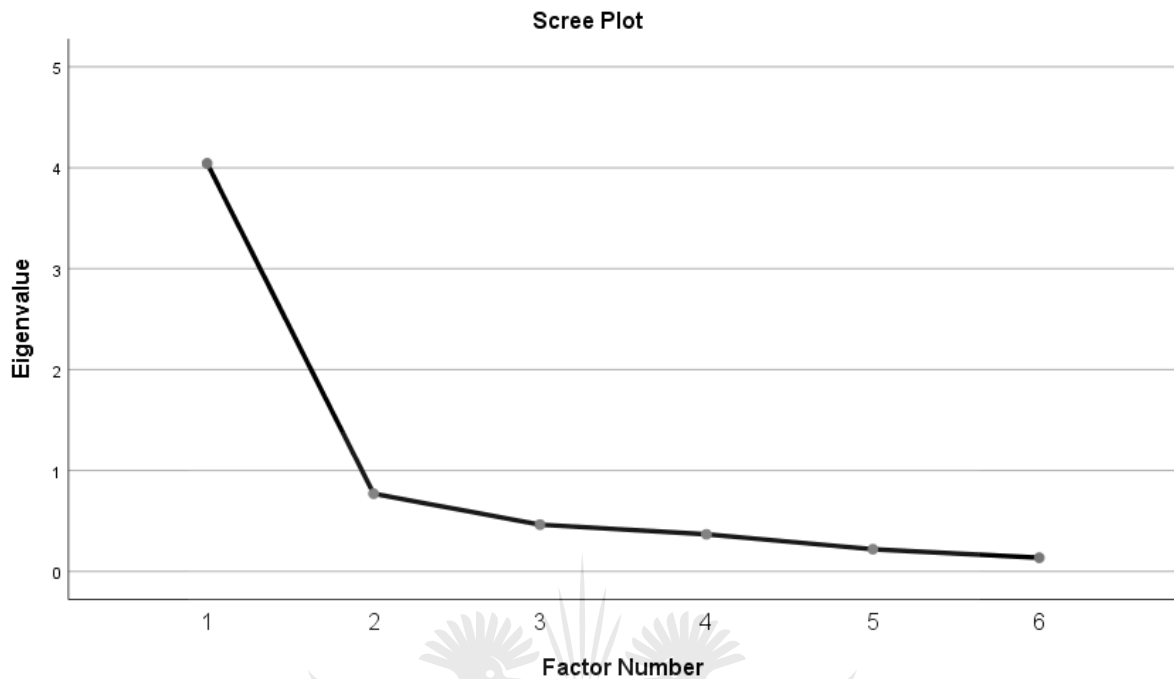


Figure 8.17: Scree plot for communication

Table 8 .45: Factor Matrix

	Factor
	1
Communicating the influence of the system on their employment conditions to the workers.	0.871
Communicating the aims and objectives of the system to workers.	0.853
Communicating ERP system benefits to workers.	0.840
Communicating the significance of the ERP system for the company to workers.	0.775
Sharing information related to ERP with stakeholders.	0.688
Communicating a clear implementation plan.	0.643

The above Table: 8.45 (Factor matrix) indicated 6 variable for communication: Communicating the influence of the system on their employment conditions to the workers 87.1%, Communicating the aims and objectives of the system to workers 85.3%, Communicating ERP system benefits to workers 84.0%, Communicating the significance of the ERP system for the company to workers 77.5%, Sharing information related to ERP with stakeholders

68.8), and Communicating a clear implementation plan 64.3%. Communication factor is accounted for a total cumulative variance of 61.322%.

8.4.1.8 Results from User Training and Education

The results for user training and education from the critical success factors are illustrated in Figure 8.18 and Tables 8.46 to 8.49. Total of seven variables are listed as follows: ERP2.8.1 Involving of workers in the ERP training programme; ERP2.8.2 Planning training and education programs for end-users; ERP2.8.3 Providing intensive training on the ERP system to all workers; ERP2.8.4 Managing a training programme by ERP experts; ERP2.8.5 Providing essential resources for training and development; ERP2.8.6 Prioritizing training of ERP; and ERP2.8.7 Recruiting a qualified implementation team.

The suitable data for factor analysis was considered before conducting the PCA. Table 8.46 indicated the correlation matrix of the existence of coefficients of more than 0.3. KMO is suggested as good because it achieved a value of 0.805, which is higher than a recommended value of 0.6. As illustrated in table 8.47. Bartlett’s Test of Sphericity was considered appropriate and it is statistically significant, with significant value of 0.000, which is less than 0.05. Table 8.49 (Rotated factor matrix) showed that two factors with eigenvalue was used at a high value of more than 1.0, and it is showed in figure 8.18(Scree plot). The total variance described by each factor are the factor 1 was 57.411 %, and factor 2 15.695% as indicated in Table 8.48.

Table 8.46: Correlation Matrix

		ERP2.8.1	ERP2.8.2	ERP2.8.3.	ERP2.8.4	ERP2.8.5	ERP2.8.6	ERP2.8.7
Correlation	ERP2.8.1	1.000	0.581	0.508	0.354	0.261	0.446	0.383
	ERP2.8.2	0.581	1.000	0.553	0.363	0.331	0.360	0.308
	ERP2.8.3	0.508	0.553	1.000	0.674	0.437	0.569	0.494
	ERP2.8.4	0.354	0.363	0.674	1.000	0.662	0.655	0.502
	ERP2.8.5	0.261	0.331	0.437	0.662	1.000	0.668	0.638
	ERP2.8.6	0.446	0.360	0.569	0.655	0.668	1.000	0.703
	ERP2.8.7	0.383	0.308	0.494	0.502	0.638	0.703	1.000

Table 8.47: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.805
Bartlett's Test of Sphericity	Approx. Chi-Square	366.970
	Df	21
	Sig.	0.000

Table 8.48: 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	4.019	57.411	57.411	3.650	52.138	52.138	2.615	37.359	37.359
2	1.099	15.695	73.105	0.698	9.978	62.116	1.733	24.757	62.116
3	0.597	8.526	81.631						
4	0.461	6.589	88.220						
5	0.371	5.306	93.525						
6	0.262	3.747	97.273						
7	0.191	2.727	100.000						

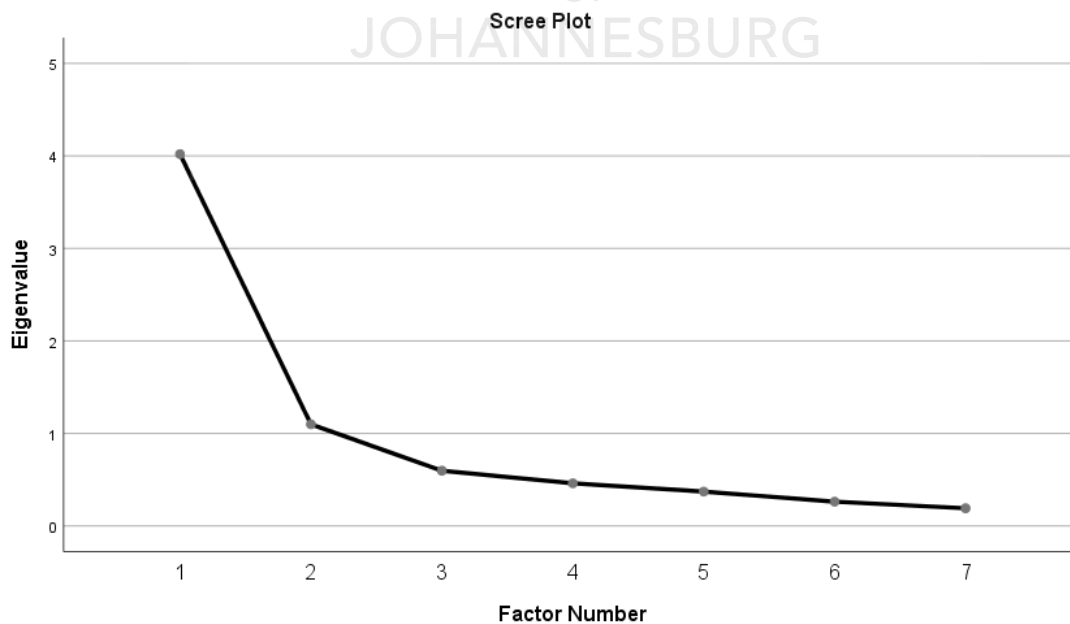


Figure 8.18: Scree plot for user training and communication

Table 8 .49: Rotated Factor Matrix

	Factor	
	1	2
Providing essential resources for training and development.	0.807	
Prioritizing training of ERP.	0.796	
Recruiting a qualified implementation team.	0.711	
Managing a training programme by ERP experts.	0.703	
Planning training and education programs for end-users.		0.745
Involving of workers in the ERP training programme.		0.699
Providing intensive training on the ERP system to all workers.		0.613

Table 8.49 indicates that there are two factors with eigenvalue of more than 1. The following descriptions were created in order to examine relationships between all variables under each factor: Factor 1: Improve workers' skills, and Factor 2: Training. These factors were named based on the examining of every variable. Variables for choice of an ERP system factors were discussed as follows: **Factor 1. Improve worker's skills:** Providing essential resources for training and development 80.7%, Prioritizing training of ERP 79.6%, Recruiting a qualified implementation team 7.11%, and Managing a training programme by ERP experts 70.3%. The factor is accounted for a total variance of 57.411%.

Factor 2. Training: Planning training and education programs for end-users 74.5%, Involving of workers in the ERP training programme 69.9%, and Providing intensive training on the ERP system to all workers 61.3%. The factor has a total variance of 15.695%, and these two factors are accounted for a total cumulative variance of 62%.

8.4.1.9 Results from Organizational Resistance

The results for organizational resistance of the project from the critical success factors are illustrated in Table 8.50 to 8.53 and Figure 8.19. Seven variables were listed: ERP2.9.1 Involving workers in the new business procedures; ERP2.9.2 Informing workers regarding the significance of the ERP system; ERP2.9.3 Preparing workers for the change; ERP2.9.4 Having top management address resistance from workers; ERP2.9.5 Providing change management in the organization; ERP2.9.6 Ensuring strategic fit of the ERP in the organization; and ERP2.9.7 Addressing organizational resistance to the implementation of ERP.

The suitable data for factor analysis was considered before conducting or performing the PCA. Table 8.50 of the correlation matrix discovered the existence of coefficients of more than 0.3. Table 8.51 indicated that KMO is recommended as good because it achieved a value of 0.824 which is higher than a recommended value of 0.6. Bartlett's Test of Sphericity was considered appropriate and it is statistically significant, with significant value of 0.000, which is less than 0.05. One factor with eigenvalue was used at a high value of more than 1.0, as indicated in table 8.53 (factor matrix), and Figure 8.19 (Scree plot), the level of eigenvalue the total variance described by the factor was 55.243 %, as indicated in Table 8.44.

Table 8.50: Correlation Matrix

		ERP2.9.1	ERP2.9.2	ERP2.9.3	ERP2.9.4	ERP2.9.5	ERP2.9.6	ERP2.9.7
Correlation	ERP2.9.1	1.000	0.665	0.464	0.383	0.503	0.474	0.502
	ERP2.9.2	0.665	1.000	0.524	0.373	0.444	0.353	0.489
	ERP2.9.3	0.464	0.524	1.000	0.551	0.396	0.273	0.464
	ERP2.9.4	0.383	0.373	0.551	1.000	0.525	0.259	0.420
	ERP2.9.5	0.503	0.444	0.396	0.525	1.000	0.621	0.657
	ERP2.9.6	0.474	0.353	0.273	0.259	0.621	1.000	0.636
	ERP2.9.7	0.502	0.489	0.464	0.420	0.657	0.636	1.000

Table 8.51: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.824
Bartlett's Test of Sphericity	Approx. Chi-Square	310.952
	Df	21
	Sig.	0.000

Table 8.52: Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.867	55.243	55.243	3.364	48.054	48.054
2	0.972	13.889	69.131			
3	0.767	10.961	80.092			
4	0.466	6.663	86.755			
5	0.358	5.113	91.868			
6	0.292	4.172	96.040			
7	0.277	3.960	100.000			

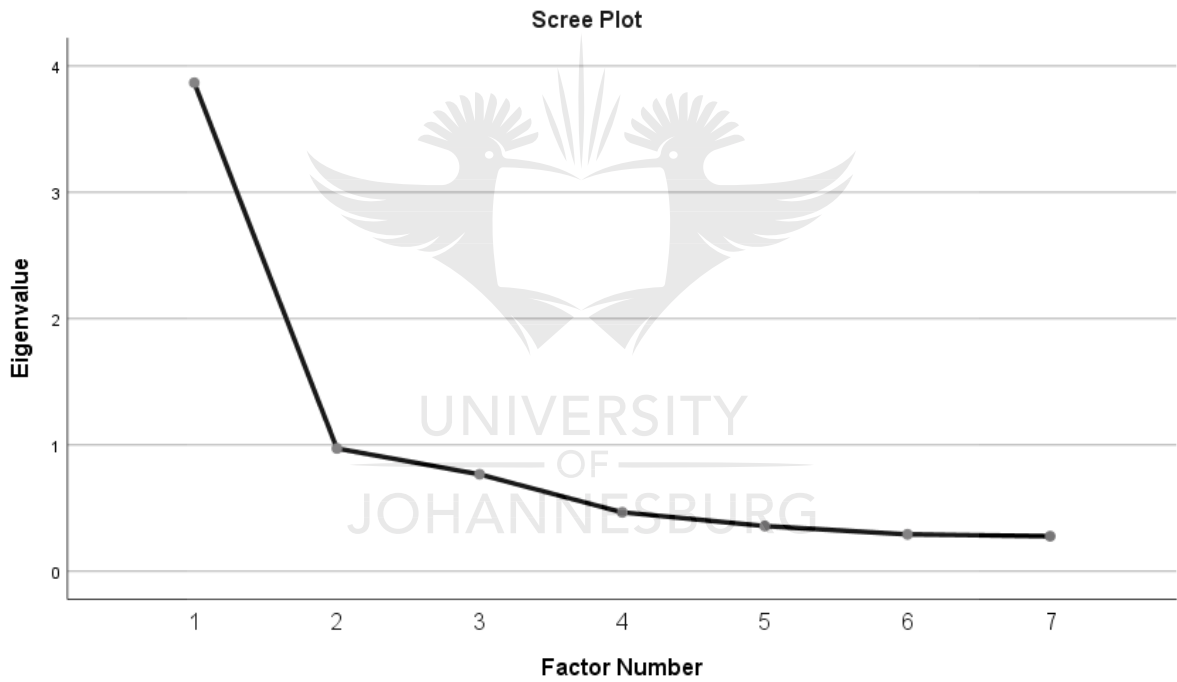


Figure 8.19: Scree plot for Organizational Resistance

Table 8.53: Factor Matrix

	Factor
	1
Addressing organizational resistance to the implementation of ERP	0.783
Providing change management in the organization.	0.774
Involving workers in the new business procedures.	0.726
Informing workers regarding the significance of the ERP system.	0.686
Ensuring strategic fit of the ERP in the organization.	0.639
Preparing workers for the change.	0.628
Having top management address resistance from workers.	0.591

The above table for Factor matrix indicated seven variable for organizational resistance: Addressing organizational resistance to the implementation of ERP 78.3%, Providing change management in the organization 77.4%; Involving workers in the new business procedures 72.6%, Informing workers regarding the significance of the ERP system 68.6%, Ensuring strategic fit of the ERP in the organization 63.9%, Preparing workers for the change 62.8%, and Having top management address resistance from workers 59.1%. Organizational resistance Factor 1 has a total cumulative variance of 48%.

8.4.2 Results from measuring quality of implementation and outcome

8.4.2.1 Rating the quality of implementation of the ERP system: Before implementation.

The results for rating the quality of implementation of the ERP system (Before implementation) are illustrated in Tables 8.54 to 8.57 and in Figure 20, six variables were listed: Q3.4.1 Before Quantity of information; Q3.4.2 Before Quality of information; Q3.4.3 Before Relevance of information; Q3.4.5 Before Reliability of information; Q3.4.6 Before Accuracy of information.

The suitable data for factor analysis was considered before conducting the PCA. Table 8.54 of the correlation matrix discovered the existence of coefficients of higher than 0.3. Table 8.55 indicated that KMO is recommended as good because it achieved a value of 0.33, which is higher than a recommended value of 0.6. Bartlett's Test of Sphericity was considered good and acceptable, it is statistically significant, and with significant value of 0.000, which is less than 0.05.

Two factors with eigenvalue was used at a high value of more than 1.0, as indicated in Table 8.57 (Rotated factor matrix), and Figure 8.20 (Scree plot), the level of eigenvalue the total variance described by the factor was 49.549%, as indicated in Table 8.56.

Table 8.54: Correlation Matrix

		Q3.4.1	Q3.4.2	Q3.4.3	Q3.4.4	Q3.4.5	Q3.4.6
Correlation	Q3.4.1	1.000	0.649	0.406	0.296	0.233	0.136
	Q3.4.2	0.649	1.000	0.361	0.341	0.340	0.274
	Q3.4.3	0.406	0.361	1.000	0.530	0.390	0.325
	Q3.4.4	0.296	0.341	0.530	1.000	0.532	0.423
	Q3.4.5	0.233	0.340	0.390	0.532	1.000	0.651
	Q3.4.6	0.136	0.274	0.325	0.423	0.651	1.000

Table 8.55: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.733
Bartlett's Test of Sphericity	Approx. Chi-Square	198.474
	Df	15
	Sig.	0.000

Table 8.56: 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	2.973	49.549	49.549	2.546	42.436	42.436	1.857	30.956	30.956
2	1.201	20.022	69.572	0.891	14.849	57.285	1.580	26.329	57.285
3	0.718	11.962	81.534						
4	0.454	7.568	89.103						
5	0.339	5.653	94.755						
6	0.315	5.245	100.000						

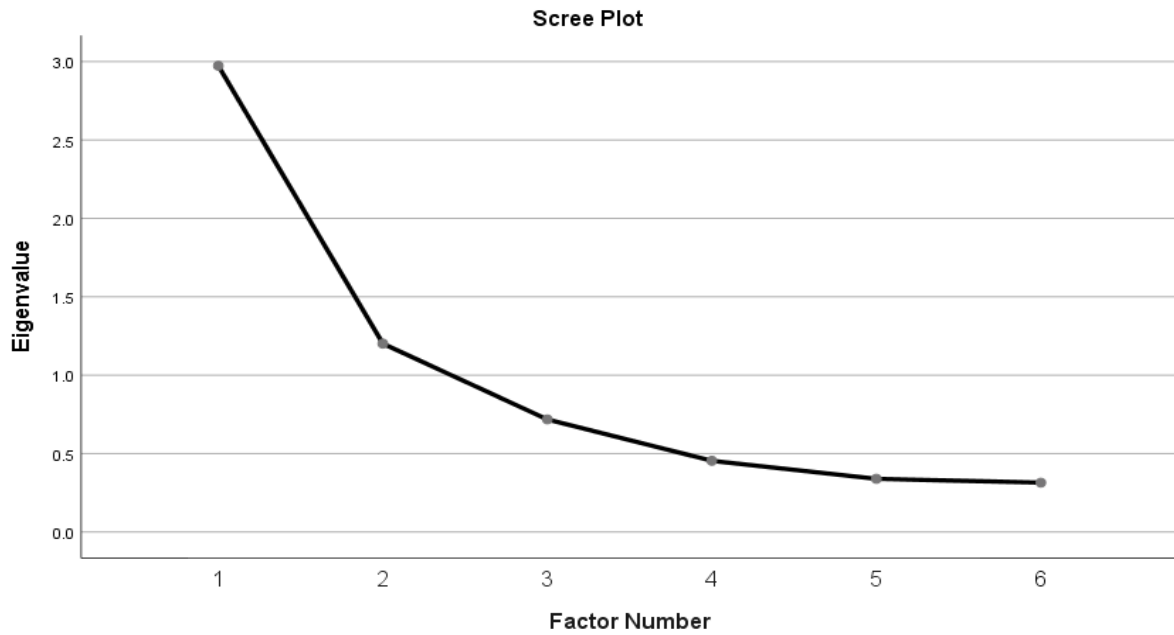


Figure 8.20: Scree plot for quality of implementation of the ERP system: Before implementation.

Table 8.57: Rotated Factor Matrix

	Factor	
	1	2
Reliability of information	0.822	
Accuracy of information	0.722	
Timeliness of information	0.613	
Relevance of information	0.455	
Quantity of information		0.920
Quality of information		0.663

Table 8.57 indicated that there are two factors with eigenvalue of more than 1. The following descriptions were created in order to examine relationships between all variables under each factor: **Factor 1: IT Support, and Factor 2: Appropriate Business planning.** These factors were named based on the examining of every variable. Variables for choice of an ERP system factors were discussed as follows: **IT Support**, Reliability of information 82.2%, Accuracy of information 72.2%, Timeliness of information 61.3%; and Before Relevance of information 45.5%, The factor is accounted for a total variance of 45.549%. **Appropriate Business Planning:** Quantity of information 92.2%, and Quality of information 66.3%.The factor is accounted for a total variance of 20.022%.The two factors are accounted for a total cumulative variance of 57%.

8.4.2.2 Results from rating the quality of implementation of the ERP system: After implementation.

The results for rating the quality of implementation of the ERP system (after implementation) are illustrated in Table 8.58 to 8.61 and Figure 8.21. Six variables were listed: Q3.4.1 After Quantity of information; Q3.4.2 After Quality of information; Q3.4.3 After Relevance of information; Q3.4.4 After Timeliness of information; Q3.4.5 After Reliability of information; and Q3.4.6 After Accuracy of information.

The suitable data for factor analysis was considered before conducting the PCA. Table 8.58 of the correlation matrix discovered the existence of coefficients of more than 0.3. Table 8.59 indicated that KMO is recommended as good because it achieved a value of 0.834, which is higher than a recommended value of 0.6. Bartlett's Test of Sphericity was considered good and acceptable, it is statistically significant, and with significant value of 0.000, which is less than 0.05.

One factor with Eigenvalue was used at a high value of more than 1.0, as indicated in Table 8.61 (factor matrix), and Figure 8.21 (Scree plot), the level of eigenvalue the total variance described by the factor was 60.668%, as indicated in Table 8.60.

Table 8.58: Correlation Matrix

		Q3.4.1	Q3.4.2	Q3.4.3	Q3.4.4	Q3.4.5	Q3.4.6
Correlation	Q3.4.1	1.000	0.724	0.666	0.499	0.492	0.440
	Q3.4.2	0.724	1.000	0.586	0.426	0.425	0.389
	Q3.4.3	0.666	0.586	1.000	0.591	0.570	0.377
	Q3.4.4	0.499	0.426	0.591	1.000	0.659	0.467
	Q3.4.5	0.492	0.425	0.570	0.659	1.000	0.573
	Q3.4.6	0.440	0.389	0.377	0.467	0.573	1.000

Table 8.59: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.834
Bartlett's Test of Sphericity	Approx. Chi-Square	286.420
	Df	15
	Sig.	0.000

Table 8.60: Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.640	60.668	60.668	3.184	53.070	53.070
2	0.851	14.180	74.849			
3	0.597	9.951	84.800			
4	0.340	5.674	90.474			
5	0.315	5.251	95.725			
6	0.256	4.275	100.000			

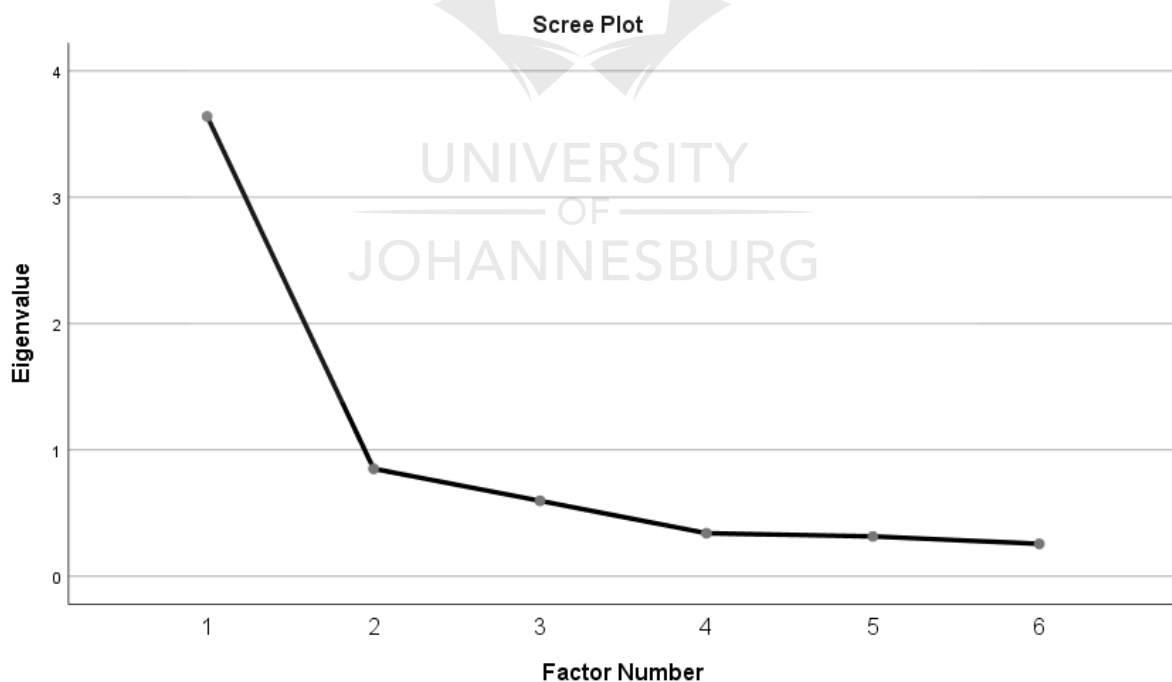


Figure: 8.21: Scree plot for quality of implementation of the ERP system: After implementation.

Table 8.61: Factor Matrix

	Factor
	1
Quantity of information	0.793
Relevance of information	0.787
Reliability of information	0.745
Timeliness of information	0.727
Quality of information	0.704
Accuracy of information	0.596

The above Table: 8.61 (Factor matrix) indicated, 6 variables for rating the quality of implementation of the ERP system **after** implementation. Quantity of information 79.3%, Relevance of information 78.7, Reliability of information 74.5%, Timeliness of information 72.7%, Quality of information 70.4%, and Accuracy of information 59.6%. Rating the quality of implementation of the ERP system: After implementation, it is accounted for a total cumulative variance of 53%.

8.4.2.3 Results from Satisfaction of the company with the ERP system it has implemented: Before implementation.

The results from Satisfaction of the company with the ERP system it has implemented: Before implementation are indicated in Tables 8.62 to 8.65, and Figure 8.22 16 variables were listed: Q3.5.1 Before Communication between the company and suppliers; Q3.5.2 Before Communication between the company and ERP vendors; Q3.5.3 Before Communication between the company and other partners; Q3.5.4 Before The business relationship between the company and suppliers; Q3.5.5 Before The business relationship between the company and ERP vendors; Q3.5.6 Before The business relationship between the company and other partners; Q3.5.6 Before The business relationship between the company and other partners; Q3.5.7 Before Satisfaction of top management; Q3.5.8 Before Satisfaction of project managers; Q3.5.9 Before Satisfaction of employees; Q3.5.10 Before Efficiency of processes; Q3.5.11 Before Amount of waste generated by the company; Q3.5.12 Before Cash flow; Q3.5.13 Before Market share; Q3.5.14 Before Value added productivity; Q3.5.15 Before Profitability achieved by the company; and Q3.5.16 Before Turnover achieved by the company.

The suitable data for factor analysis was considered before conducting the PCA. Table 8.62 of the correlation matrix discovered the existence of coefficients of more than 0.3. Table 7.63 indicated that KMO is good because it achieved a value of 0.874, which is higher than a

recommended value of 0.6. Bartlett's Test of Sphericity was good and acceptable, it is statistically significant, and with significant value of 0.000, which is less than 0.05.

Three factors with eigenvalue were used at a high value of more than 1.0, as indicated in Table 8.65 (Rotated factor matrix), and Figure 8.22 (Scree plot), the level of eigenvalue, and the total variance described by the factor were, Factor 1 47.362%, Factor 2 13.660%, and Factor 3 6.918%, as indicated in Table 8.64.



Table 8.62: Correlation Matrix

		Q3.5.1	Q3.5.2	Q3.5.3	Q3.5.4	Q3.5.5	Q3.5.6	Q3.5.7	Q3.5.8	Q3.5.9	Q3.5.10	Q3.5.11	Q3.5.12	Q3.5.13	Q3.5.14	Q3.5.15	Q3.5.16
Correlation	Q3.5.1	1.000	0.664	0.524	0.469	0.388	0.460	0.356	0.312	0.212	0.366	0.066	0.256	0.260	0.248	0.319	0.229
	Q3.5.2	0.664	1.000	0.673	0.449	0.511	0.428	0.264	0.302	0.195	0.292	0.177	0.306	0.314	0.399	0.362	0.295
	Q3.5.3	0.524	0.673	1.000	0.680	0.566	0.554	0.454	0.381	0.227	0.251	0.285	0.402	0.287	0.347	0.391	0.391
	Q3.5.4	0.469	0.449	0.680	1.000	0.599	0.659	0.446	0.404	0.304	0.314	0.264	0.436	0.211	0.285	0.294	0.331
	Q3.5.5	0.388	0.511	0.566	0.599	1.000	0.652	0.534	0.363	0.206	0.289	0.256	0.357	0.279	0.343	0.326	0.321
	Q3.5.6	0.460	0.428	0.454	0.659	0.652	1.000	0.600	0.540	0.376	0.335	0.128	0.346	0.382	0.356	0.448	0.391
	Q3.5.7	0.356	0.264	0.454	0.446	0.534	0.600	1.000	0.633	0.530	0.516	0.371	0.509	0.384	0.419	0.586	0.604
	Q3.5.8	0.312	0.302	0.381	0.404	0.306	0.540	0.633	1.000	0.643	0.600	0.396	0.532	0.444	0.490	0.539	0.584
	Q3.5.9	0.212	0.195	0.227	0.304	0.206	0.376	0.530	0.643	1.000	0.598	0.395	0.554	0.484	0.434	0.544	0.557
	Q3.5.10	0.366	0.306	0.402	0.376	0.335	0.340	0.530	0.643	0.598	1.000	0.526	0.554	0.429	0.430	0.556	0.554
	Q3.5.11	0.066	0.177	0.285	0.294	0.256	0.128	0.371	0.516	0.371	0.526	1.000	0.557	0.385	0.429	0.440	0.470
	Q3.5.12	0.256	0.306	0.402	0.446	0.534	0.340	0.530	0.643	0.598	0.554	0.557	1.000	0.512	0.563	0.613	0.632
	Q3.5.13	0.260	0.314	0.287	0.285	0.206	0.376	0.384	0.444	0.484	0.429	0.385	0.512	1.000	0.780	0.728	0.559
	Q3.5.14	0.248	0.399	0.347	0.294	0.343	0.586	0.419	0.586	0.419	0.586	0.429	0.563	0.780	1.000	0.718	0.669
	Q3.5.15	0.229	0.295	0.391	0.331	0.326	0.448	0.391	0.584	0.584	0.584	0.604	0.449	0.718	0.718	1.000	0.814
	Q3.5.16	0.229	0.295	0.391	0.331	0.326	0.448	0.391	0.584	0.584	0.584	0.604	0.449	0.718	0.718	0.814	1.000

University of Johannesburg- K Mushavhanamadi (May 2019)

Table 8.63: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.874
Bartlett's Test of Sphericity	Approx. Chi-Square	1000.131
	Df	120
	Sig.	0.000

Table 8.64: 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	7.578	47.362	47.362	7.206	45.035	45.035	3.633	22.708	22.708
2	2.186	13.660	61.022	1.793	11.208	56.244	3.523	22.022	44.729
3	1.107	6.918	67.940	0.764	4.774	61.017	2.606	16.288	61.017
4	0.872	5.447	73.387						
5	0.838	5.236	78.623						
6	0.522	3.265	81.888						
7	0.515	3.218	85.106						
8	0.422	2.639	87.745						
9	0.368	2.300	90.045						
10	0.336	2.102	92.147						
11	0.325	2.030	94.177						
12	0.251	1.569	95.746						
13	0.233	1.459	97.204						
14	0.183	1.142	98.347						
15	0.145	0.904	99.251						
16	0.120	0.749	100.000						

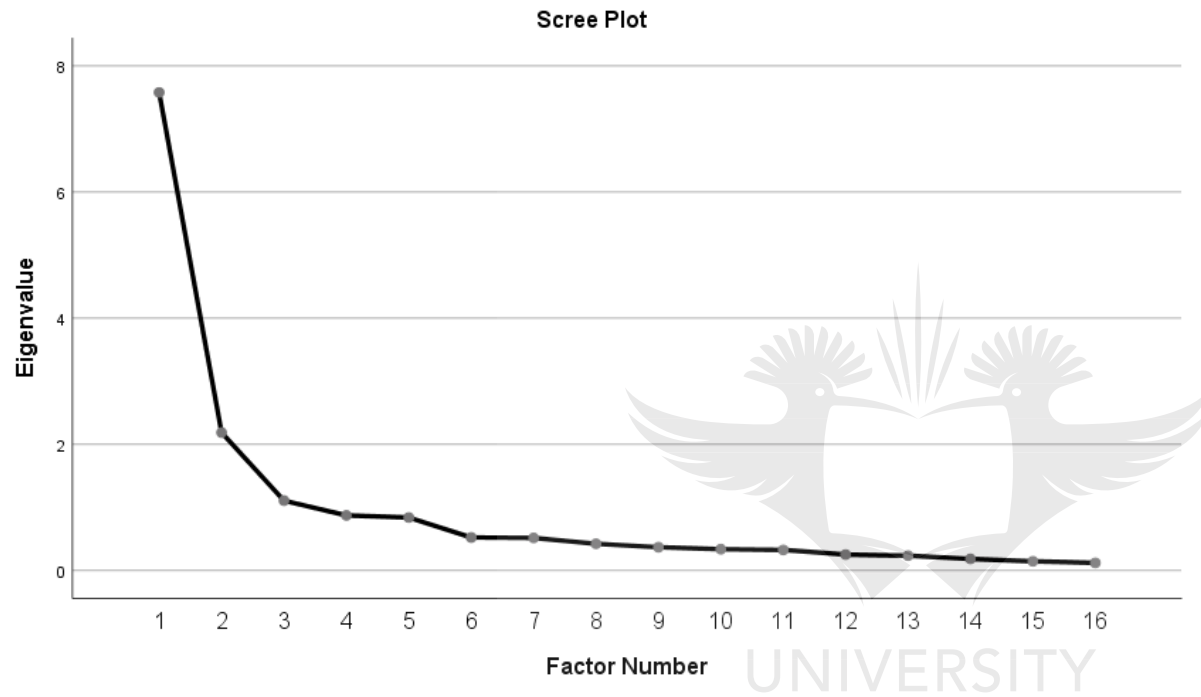


Figure 8.22: Scree plot for Satisfaction of the company with the ERP system it has implemented: Before implementation

Table 8.65: Rotated Factor Matrix

	Factor		
	1	2	3
Satisfaction of project managers	0.704		
Satisfaction of employees	0.700		
Satisfaction of top management	0.672		
Efficiency of processes	0.639		
Turnover achieved by the company	0.604		
Cash flow	0.583		
Amount of waste generated by the company	0.480		
Communication between the company and other partners		0.783	
Communication between the company and ERP vendors		0.733	
The business relationship between the company and suppliers		0.724	
The business relationship between the company and ERP vendors		0.681	
The business relationship between the company and other partners		0.673	
Communication between the company and suppliers		0.643	
Value added productivity			0.780
Market share			0.727
Profitability achieved by the company			0.685

Table 8.65 indicated that there are three factors with eigenvalue of more than 1. The following descriptions were created in order to examine relationships between all variables under each factor: **Factor 1: job satisfaction, Factor 2: proper communication, and Factor 3: company profit.** These factors were named based on the examining of every variable. Variables for choice of an ERP system factors were discussed as follows: : **Job satisfaction,** Satisfaction of project managers 70.4%; Satisfaction of employees 70.0%; Satisfaction of top management 67.2%; Efficiency of processes 63.9%; Turnover achieved by the company 60.4%; Cash flow 58.3%; and Amount of waste generated by the company 48.0%. The factor is accounted for a total variance of 47.362%. **Proper communication:** Communication between the company and other partners 78.3%; Communication between the company and ERP vendors 73.3%; The business relationship between the company and suppliers 72.4%; The business relationship between the company and ERP vendors 68.1%; The business relationship between the company and other partners 67.3%; and Communication between the company and suppliers (64.3%). The factor is accounted for a total variance of 13.660%. **Company profit:** Value added productivity 78.0%; Market share 72.7%; and Profitability achieved by the company 68.5%. The factor is accounted for a total variance of 6.918%, and three factors are accounted for a total cumulative variance of 61%.

8.4.2.4 Results from Satisfaction of the company with the ERP system it has implemented: After implementation.

The results from Satisfaction of the company with the ERP system it has implemented: After implementation are indicated in Tables 8.66 to 8.69, and Figure 8.23. 16 variables were listed: Q3.5.1 After Communication bet Q3.5.2 After Communication between the company and ERP vendors ween the company and suppliers; Q3.5.2 After Communication between the company and ERP vendors; Q3.5.3 After Communication between the company and other partners; Q3.5.3 After Communication between the company and other partners; Q3.5.4 After The business relationship between the company.; Q3.5.5 After The business relationship between the company and ERP vendors; Q3.5.6 After The business relationship between the company and other partners; Q3.5.7 After Satisfaction of top management; Q3.5.8 After Satisfaction of project managers; Q3.5.9 After Satisfaction of employees; Q3.5.10 After Efficiency of processes; Q3.5.11 After Amount of waste generated; Q3.5.12 After Cash flow; Q3.5.13 After Market share; Q3.5.14 After Value added productivity; Q3.5.15 After Profitability achieved by the company; and Q3.5.16 After Turnover achieved by the company.

The suitable data for factor analysis was considered before conducting the PCA. Table 8.66 of the correlation matrix revealed the existence of coefficients of higher than 0.3. Table 8.67 indicated that KMO is recommended as good because it achieved a value of 0.820, which is

more than a recommended value of 0.6. Bartlett's Test of Sphericity was considered good, it is statistically significant, and with significant value of 0.000, which is less than 0.05.

Four factors with eigenvalue were used at a high value of more than 1.0, as indicated in Table 8.69 (Rotated factor matrix), and Figure 8.23 (Scree plot), the level of eigenvalue, and the total variance described by the factor were: Factor 1 42.936%, Factor 2 10.642%, and Factor 3 7.215%, and Factor 4 6.837% as indicated in Table 8.68.



Table 8.66: Correlation Matrix

		Q3.5.1	Q3.5.2	Q3.5.3	Q3.5.4	Q3.5.5	Q3.5.6	Q3.5.7	Q3.5.8	Q3.5.9	Q3.5.10	Q3.5.11	Q3.5.12	Q3.5.13	Q3.5.14	Q3.5.15	Q3.5.16
Correlation	Q3.5.1	1.000	0.581	0.455	0.402	0.447	0.220	0.286	0.425	0.352	0.315	0.253	0.267	0.325	0.232	0.349	0.453
	Q3.5.2	0.581	1.000	0.554	0.260	0.455	0.249	0.210	0.309	0.304	0.313	0.217	0.399	0.322	0.258	0.287	0.296
	Q3.5.3	0.455	0.554	1.000	0.499	0.343	0.407	0.373	0.347	0.228	0.297	0.370	0.360	0.286	0.265	0.353	0.306
	Q3.5.4	0.402	0.260	0.499	1.000	0.551	0.426	0.351	0.403	0.270	0.177	0.273	0.288	0.367	0.224	0.314	0.332
	Q3.5.5	0.447	0.455	0.343	0.551	1.000	0.670	0.343	0.394	0.398	0.252	0.285	0.409	0.385	0.418	0.404	0.345
	Q3.5.6	0.220	0.249	0.407	0.426	0.670	1.000	0.462	0.335	0.283	0.114	0.196	0.263	0.189	0.256	0.282	0.260
	Q3.5.7	0.286	0.210	0.373	0.351	0.343	0.462	1.000	0.632	0.464	0.386	0.348	0.433	0.200	0.396	0.381	0.474
	Q3.5.8	0.425	0.309	0.347	0.403	0.394	0.335	0.632	1.000	0.543	0.482	0.393	0.414	0.365	0.423	0.537	0.510
	Q3.5.9	0.352	0.304	0.228	0.270	0.398	0.283	0.464	0.543	1.000	0.582	0.508	0.418	0.429	0.503	0.497	0.556
	Q3.5.10	0.315	0.313	0.297	0.177	0.252	0.114	0.386	0.482	0.582	1.000	0.646	0.454	0.372	0.451	0.475	0.476
	Q3.5.11	0.253	0.217	0.370	0.273	0.285	0.196	0.348	0.393	0.508	0.646	1.000	0.461	0.338	0.469	0.376	0.405
	Q3.5.12	0.267	0.399	0.360	0.288	0.409	0.263	0.433	0.414	0.418	0.454	0.461	1.000	0.470	0.417	0.501	0.416
	Q3.5.13	0.325	0.322	0.286	0.367	0.385	0.189	0.200	0.365	0.429	0.372	0.338	0.470	1.000	0.684	0.621	0.476
	Q3.5.14	0.232	0.258	0.265	0.224	0.418	0.256	0.396	0.423	0.503	0.451	0.469	0.417	0.684	1.000	0.725	0.551
	Q3.5.15	0.349	0.287	0.353	0.314	0.404	0.282	0.381	0.537	0.497	0.475	0.376	0.501	0.621	0.725	1.000	0.671
	Q3.5.16	0.453	0.296	0.306	0.332	0.345	0.260	0.474	0.510	0.556	0.476	0.405	0.416	0.476	0.551	0.671	1.000

Table 8.67: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.820
Bartlett's Test of Sphericity	Approx. Chi-Square	772.695
	Df	120
	Sig.	0.000

Table 8.68: 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	6.870	42.936	42.936	6.454	40.336	40.336	2.912	18.202	18.202
2	1.703	10.642	53.578	1.304	8.148	48.484	2.419	15.120	33.322
3	1.154	7.215	60.793	0.768	4.801	53.285	2.002	12.511	45.833
4	1.094	6.837	67.630	0.731	4.568	57.853	1.923	12.020	57.853
5	0.844	5.275	72.905						
6	0.714	4.460	77.365						
7	0.685	4.284	81.649						
8	0.569	3.559	85.208						
9	0.462	2.885	88.093						
10	0.394	2.462	90.554						
11	0.365	2.281	92.836						
12	0.304	1.902	94.738						
13	0.292	1.823	96.561						
14	0.260	1.625	98.187						
15	0.160	1.002	99.189						
16	0.130	0.811	100.000						

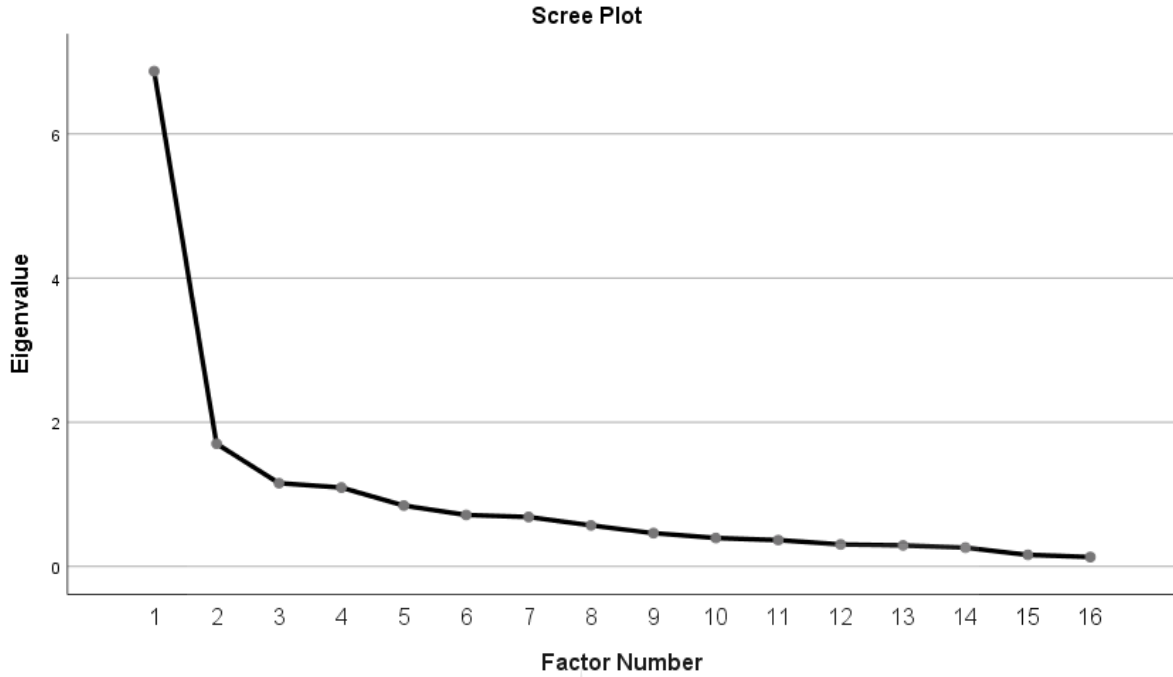


Figure 8.23: Scree plot for Satisfaction of the company with the ERP system it has implemented: After implementation

Table 8.69 Rotated Factor Matrix

	Factor			
	1	2	3	4
Efficiency of processes	0.733			
Satisfaction of employees	0.613			
Satisfaction of top management	0.601			
Amount of waste generated by the company	0.598			
Satisfaction of project managers	0.591			
Turnover achieved by the company	0.500			
Cash flow	0.421			
Value added productivity		0.758		
Market share		0.756		
Profitability achieved by the company		0.689		
The business relationship between the company and other partners			0.800	
The business relationship between the company and ERP vendors			0.639	
The business relationship between the company and suppliers			0.504	
Communication between the company and ERP vendors				0.775
Communication between the company and suppliers				0.628
Communication between the company and other partners				0.556

Table 8.69 indicated that there are four factors with eigenvalue of more than 1. The following descriptions were created in order to examine relationships between all variables under each factor:

Factor 1: Performance improvement, Factor 2: Productivity improvement, Factor 3: Supply chain management, and Factor 4: Communication Improvement, these factors were named based on the examining of all the variables. Variables for choice of an ERP system factors were discussed as follows:

Performance improvement: Efficiency of processes 73.3%; Satisfaction of employees 61.3%; Satisfaction of top management 60.1%; Amount of waste generated by the company 59.8%; Satisfaction of project managers 59.1%; Turnover achieved by the company 50.0%; and Cash flow 42.1%. The factor is accounted for a total variance of 42.936%. **Productivity improvement:** Value added productivity 75.8%; Market share 75.6%; and Profitability achieved by the company 68.9%. The factor accounted for a total variance of 10.642%. **Supply chain management:** The business relationship between the company and other partners 80.8%; The business relationship between the company and ERP vendors 63.9%; and, The business relationship between the company and suppliers 50.4%. The factor accounted for a total variance of 72.15%, and **Communication Improvement:** Communication between the company and ERP vendors 77.5%; Communication between the company and suppliers 62.3%; and Communication between the company and other partners 55.6%. The factor is accounted for a total variance of 6.837%, and four factors are accounted for a total cumulative variance of 57.9%.

8.5 Exploratory reliability analysis

8.5.1 Exploratory reliability statistics: Critical success factors

With the Cronbach's Alpha, item values above 0.7 are considered acceptable, but values above 0.8 are preferable, pallant spss survival guide (2007). Cronbach's Alpha represents the closeness of all items and reliability.

Table 8.70: Reliability Statistics (Critical Success Factors)

Critical Success Factors	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Vision and planning of Project	0.884	0.885	7
Choice of an ERP system	0.758	0.760	5
Support from top management	0.896	0.897	6
Project management	0.833	0.832	7
Project Champion	0.762	0.762	7
Business Process Re-engineering	0.857	0.857	7
Communication	0.902	0.902	6
User training and education	0.875	0.874	7
Organisational resistance	0.864	0.864	7

Table 8.70 above represents reliability statistics for 9 CSF, the internal consistency of the data collected on all CSF were measured through the computation of the Cronbach's Alpha coefficient. The Cronbach's Alpha for vision and planning of project is 0.884 based on the 7-item scale, which means that the data presented in the table is acceptable. The table depicting the Cronbach's Alpha for choice of an ERP system is 0.758 based on the 5-item scale. This means that the data presented is considered acceptable; the Cronbach's Alpha for Support from top management is 0.896 based on the 6-item scale, the data presented is acceptable.

For Project management, Cronbach's Alpha is 0.833 based on the 7-item scale, which means that the data is also considered acceptable. About project champion, the table depicting the Cronbach's Alpha is 0.762 based on the 7-item scale, and it is considered acceptable. Finally, the table depicting the Cronbach's Alpha for Business Process Re-engineering is 0.857 based on the 7-item scale, the data is acceptable. The Cronbach is Alpha for communication is 0.902 based on the 6-item scale. This means that the data presented is acceptable. Cronbach's Alpha for user training and education is 0.875 based on the 7-item scale, the data is also acceptable; and finally from the table depicting the Cronbach's Alpha for Organisational resistance is 0.865 based on the 7-item scale. This means that the data presented is also acceptable.

8.5.2 Exploratory reliability Summary item statistics: Critical success factors

Table 8.71: Summary Item Statistics: Critical success factors

Inter-Item Correlations	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Vision and planning of Project	0.523	0.366	0.755	0.389	2.064	0.013	7
Choice of an ERP system	0.388	0.196	0.694	0.454	3.315	0.025	5
Support from top management	0.593	0.474	0.721	0.247	1.522	0.006	6
Project management	0.415	0.137	0.679	0.542	4.954	0.019	7
Project Champion	0.314	0.082	0.586	0.504	7.164	0.020	7
Business Process Re-engineering	0.461	0.303	0.722	0.419	2.383	0.017	7
Communication	0.605	0.466	0.845	0.379	1.814	0.013	6
User training and education	0.498	0.261	0.703	0.441	2.688	0.019	7
Organisational resistance	0.475	0.259	0.665	0.406	2.570	0.013	7

With scales with less than ten items, it is very challenging to get good Cronbach's Alpha values, and it is important to report inter-item correlation value, in the Summary Item Statistics; (pallant spss survival guide, 2007). Table 8.71 indicates the mean inter-item correlation for vision and planning of project of 0.523, with values ranging from 0.366 to 0.755, so this factor suggest a quite strong relationship between the items. With regard to the choice of an ERP system the inter-item correlation is 0.388 with value ranging from 0.196 and 0.694, and the factor suggests a good relationship. Support from top management shows a quite strong relationship between items, with the mean inter-item correlation of 0.593, and values ranging from 0.474 and 0.721; followed by Project management suggesting a good relationship, with the mean inter-item correlation of 0.415, and values ranging from 0.137 and 0.679. Project Champion and Business Process Re-engineering factors suggested a good relationship with the mean inter-item correlation of 0.314 and 0.461; and values ranging from 0.082 and 0.586; and 0.461 and 0.303 respectively. On Communication, the factor indicates the mean inter-item correlation of 0.605; and values ranging from 0.466 and 0.845, so this factor suggest a quite strong relationship between the items. User training and education shows a good relationship with the mean inter-item correlation of 0.498, and values ranging from 0.261 and 0.703. Finally, Organisational resistance indicates a good relationship with the mean inter-item correlation of 0.475, and values ranging from 0.259 and 0.665.

8.5.3 Exploratory reliability analysis: Measuring quality of implementation

Tables 8.72 and 8.73 below, explain the reliability statistics, before and after ERP implementation.

8.5.3.1 Reliability statistics from measuring quality of ERP implementation

Table 8.72: Reliability Statistics: Implementation of the ERP system

ERP Implementation system	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Before	0.795	0.795	6
After	0.869	0.869	6

The above table represents reliability statistics for measuring quality of ERP, before and after implementation. The internal consistency of the data collected on all reliability values were measured through the computation of the Cronbach's Alpha coefficient. The Cronbach's alpha *before* ERP implementation is 0.795 based of the 6-item scale, this means that the data presented in the table is acceptable; and the Cronbach's Alpha *after* ERP implementation of ERP system is 0.869 based of the 6-item scale, which is considered acceptable.

8.5.3.2 Summary Statistics from measuring quality of implementation

Table 8.73: Summary Statistics: Implementation of the ERP system

Inter-Item Correlations	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Before	0.393	0.136	0.651	0.515	4.792	0.021	6
After	0.526	0.377	0.724	0.347	1.920	0.011	6

Table 8.73 shows summary statistics for measuring the quality of ERP Implementation. Before implementation, the mean inter-item correlation was 0.393, with values ranging from 0.136 to 0.651; and after implementation the mean inter-item correlation is 0.526 with values ranging from 0.377 and 0.724, and this suggest a quite strong relationship between the items.

8.5.4: Exploratory reliability analysis: Rating quality of factors relevant to a company

Tables 8.74 and 8.75 below explain reliability statistics for rating quality of factors relevant to a company before and after implementation.

8.5.4.1 Results from rating quality of factors relevant to a company: Before implementation of the ERP system

Table 8.74 represents reliability statistics for rating quality of factors, before and after ERP implementation system, the internal consistency of the data collected on reliability were measured through the computation of the Cronbach's Alpha coefficient. The Cronbach's Alpha before ERP implementation is 0.923 based on the 16 item scale, this means that the data presented in the table is good and acceptable; and the Cronbach's Alpha after ERP implementation of ERP system is 0.910 based on the 16 item scale, which is also good and acceptable.

Table 8.74: Reliability Statistics, Rating quality of factors: ERP implementation

Rating quality of factors relevant to a company	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Before	0.923	0.924	16
After	0.910	0.910	16

The table below indicates summary statistics for rating quality of factors, before and after ERP implementation system, Before implementation, the mean inter-item correlation was 0.433, with values ranging from 0.066 to 0.814; and after implementation the mean inter-item correlation is 0.387 with values ranging from 0.114 and 0.725, and this suggests quite a strong relationship between the items.

Table 8.75: Summary item Statistics, Rating quality of factors: ERP implementation

Inter-Item Correlations	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Before	0.433	0.066	0.814	0.748	12.297	0.022	16
After	0.387	0.114	0.725	0.611	6.364	0.014	16

8.6 Tests of Normality

Table 8.76 indicates tests for normality for all nine CSF, and Measuring quality of implementation and outcome. Test for normality used Kolmogorov-Smirnov tests, because all factors' degree of freedom (df) values were more than fifty, the total df for the table below is 101. For assuming normality, Vision and planning of the project is significant; Choice of ERP system; Support from Top Management; Project Management; Business Process and Reengineering; Communication; User Training and Education; Organizational Resistance; Measuring Quality of Implementation and Outcome (*Before* and *after* implementation of the ERP system); and the list of factors relevant to a company **After** implementation of the ERP system, were not normally distributed because all significant values were lower than $p > .05$, suggesting a violation of the assumption of normality. A list of factors relevant to a company (**Before** implementation of the ERP system) had a value of 0.167, which is greater than ($p > .05$), so this shows a normal distribution.

Table 8.76: Tests of normality for all factors

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Vision and planning of the project	0.109	101	0.005	0.927	101	0.000
Choice of ERP system	0.176	101	0.000	0.923	101	0.000
Support from Top Management	0.115	101	0.002	0.958	101	0.003
Project Management	0.114	100	0.003	0.966	100	0.011
Business process and Reengineering	0.127	100	0.000	0.958	100	0.003
Communication	0.150	101	0.000	0.942	101	0.000
User Training and Education	0.089	101	0.049	0.957	101	0.002
Organizational Resistance	0.105	101	0.008	0.981	101	0.142
Project Champion	0.085	100	0.070	0.981	100	0.156
Q3.4 BEFORE	0.120	100	0.001	0.969	100	0.018
Q3.4_AFTER	0.216	101	0.000	0.874	101	0.000
Q3.5_BEFORE	0.076	100	0.167	0.979	100	0.103
Q3.5_AFTER	0.200	101	0.000	0.848	101	0.000

8.7 Results from Correlation

Table 8.77 below identifies correlations for all nine CSF and Measuring quality of ERP implementation and outcome. The researcher uses tests for non-parametric correlation, which considered the Spearman Rank Order Correlation (ρ), significance [sig. (2-tailed)], and the sample sizes (N), for best results. A high correlation of $r = .640$, $N = 101$; and $p < .05$. Between Vision and planning of the project and Choice of an ERP system was indicated, and this suggest that there is a quite strong relationship between two variables within organizations. A very strong positive correlation was also identified between vision and planning of the project, and support from top management with strong correlation, $r = .546$, $N = 101$; and $p < .05$. Another strong positive correlation was observed between vision and planning of the project and project champion with a correlation $r = .513$, $N = 100$; and $p < .05$ which shows that the relationship between these two factors is very solid.

A good relationship was observed between: vision and planning of the project, and organizational resistance, with a medium correlation $r = .422$, $N = 101$; and $p < .05$; Vision and planning of the project, and Business process reengineering, with $r = .496$, $N = 101$; and $p < .05$; Vision and planning of the project, and Communication with $r = .342$, $N = 101$; and $p < .05$; Vision and planning of the project, and User training and education, with $r = .373$, $N = 101$; and $p < .05$; Vision and planning of the project, and Measuring quality of implementation and outcome: List of attributes for information used in the company (**After** implementation of the ERP system) with, $r = .410$, $N = 101$; and $p < .05$; and Vision and planning of the project, and Measuring quality of implementation and outcome: List of factors relevant to a company (**After** implementation of the ERP system) with $r = .304$, $N = 101$; and $p < .05$.

A small correlation of $r = .286$, $N = 100$; and, $p > .05$ was observed between Vision and planning of the project, and Project management. Another small correlation was identified with a correlation $r = .183$, $N = 101$; and, $p > .05$, between Vision and planning of the project, and List of attributes for information used in the company (**Before** implementation of the ERP system), and a weak correlation between Vision and planning of the project, and List of factors relevant to a company (**Before** implementation of the ERP system) with $r = 0.078$, $N = 100$; and $p > .05$.

A strong positive correlation obtained between Choice of an ERP system and Support from top management, $r = .507$, $N = 101$; and $p < .05$. This shows that the relationship between these two factors is very solid.

A positive correlation was observed between Choice of an ERP system and Project management, with a correlation $r = .401$, $N = 100$; and $p < .05$; Choice of an ERP system and business process reengineering, with a correlation $r = .386$, $N = 100$; and $p < .05$; Choice of an

ERP system and Communication, with a medium correlation $r = .347$, $N = 101$; and $p < .05$. Choice of an ERP system and User training and education, has a medium correlation $r = .364$, $N = 101$; and $p < .05$; Choice of an ERP system and Organizational resistance, has a medium correlation ($r = .366$, $N = 101$; and $p < .05$); Choice of an ERP system and project champion, with a medium correlation $r = .410$, $N = 100$; and $p < .05$; Choice of an ERP system and List of attributes for information used in the company (**Before** implementation of the ERP system), with a medium correlation $r = .331$, $N = 100$; and $p < .05$; Choice of an ERP system and List of attributes for information used in the company (**After** implementation of the ERP system), with a medium correlation $r = .489$, $N = 101$; and $p < .05$; and Choice of an ERP system and List of factors relevant to a company (**After** implementation of the ERP system) with a medium correlation $r = .397$, $N = 101$; and $p < .05$.

A weak correlation was identified $r = 0.117$, $N = 100$; $p > .05$, between Choice of an ERP system, and List of factors relevant to a company (**Before** implementation of the ERP system).

A strong correlation $r = .514$, $N = 100$; and $p < .05$ between Support from top management and Business process reengineering was observed. A positive correlation was observed between Support from top management and Project management, with a correlation $r = .343$, $N = 100$; and $p < .05$. Support from top management and Communication, with a correlation $r = .483$, $N = 101$; and $p < .05$; Support from top management and User training and education with a correlation $r = .412$, $N = 101$; and $p < .05$; Support from top management and Organizational resistance, with a correlation $r = .399$, $N = 101$; and $p < .05$. Support from top management and Project champion, with a moderate correlation $r = .332$, $N = 100$; and $p < .05$; Support from top management and List of attributes for information used in the company (**After** implementation of the ERP system, with a correlation $r = .462$, $N = 101$; and $p < .05$; and Support from top management and List of factors relevant to a company (**After** implementation of the ERP system), with a moderate correlation $r = .400$, $N = 101$; and $p < .05$.

A weak negative correlation was observed between Support from top management and List of factors relevant to a company (**Before** implementation of the ERP system), with a negative correlation $r = -0.071$, $N = 100$; and $p > .05$. A small correlation was identified with $r = 0.134$, $N = 100$; $p > .05$, between Choice of an ERP system and List of attributes for information used in the company (**Before** implementation of the ERP system).

A medium correlation was observed with $r = .427$, $N = 100$; $p < .05$ between Project management, and Business process and re-engineering; $r = .396$, $N = 100$; $p < .05$, between Project management, and User training and education; $r = .312$, $N = 100$; $p < .05$, between Project management, and Organizational resistance; $r = .422$, $N = 100$; $p < .05$, between Project management, and Project champion; $r = .387$, $N = 100$; $p < .05$, between Project management,

and List of attributes for information used in the company (**After** implementation of the ERP system); and $r = .341$, $N = 100$; $p < .05$, between Project management, and List of factors relevant to a company (**After** implementation of the ERP system). This indicates that there is a good relationship between factors.

A small correlation was identified with a correlation $r = .268$, $N = 100$, $p < .05$, between project management and communication; $r = .252$, $N = 99$, $p < .05$, between project management and, list of attributes for information used in the company (**Before** implementation of the ERP system); and $r = 0.133$, $N = 99$, $p > .05$, between project management and, List of factors relevant to a company (**Before** implementation of the ERP system).

A positive correlation was observed between Business process and re-engineering, and project champion with a large correlation of $r = .525$, $N = 100$, $p < .05$; Business process and re-engineering, and Organizational resistance with a strong correlation of $r = .514$, $N = 100$, $p < .05$; Business process and re-engineering, and Project champion with a correlation of $r = .525$, $N = 100$, $p < .05$; Business process and re-engineering, and List of attributes for information used in the company (**After** implementation of the ERP system); with a strong correlation of $r = .522$, $N = 100$, $p < .05$; these show that there is a strong relationship between factors.

There is a good relationship between Business process and re-engineering, and Communication with a correlation of $r = .331$, $N = 100$, $p < .05$; Business process and re-engineering, and User training and education $r = .452$, $N = 100$, $p < .05$; and Business process and re-engineering, and List of factors relevant to a company (**After** implementation of the ERP system), with $r = .435$, $N = 100$, $p < .05$. There is a small correlation of $r = 0.133$, $N = 99$; and $p > .05$, between Business process and re-engineering, and List of attributes for information used in the company (**Before** implementation of the ERP system).

A weak correlation between Business process and re-engineering, and List of factors relevant to a company (**Before** implementation of the ERP system) with $r = 0.035$, $N = 99$; and $p > .05$.

A strong correlation was observed with $r = .551$, $N = 101$; $p < .05$, between Communication, and List of attributes for information used in the company (**After** implementation of the ERP system); and between Communication and List of factors relevant to a company (**After** implementation of the ERP system) with $r = .530$, $N = 101$; $p < .05$, so these indicates a strong positive relationship. A correlation was observed with $r = .429$, $N = 101$; $p < .05$, between Communication, and User training and education; and $r = .307$, $N = 101$; $p < .05$, between Communication, and Organizational resistance; and this indicates that there is a strong relationship. A small correlation with $r = .215$, $N = 100$; $p < .05$, between Communication, and Project champion; and $r = .151$, $N = 100$; $p > .05$, between Communication, and List of attributes

for information used in the company (**Before** implementation of the ERP system). There is a negative relationship between Communication and List of factors relevant to a company (**Before** implementation of the ERP system) with a weak negative correlation $r = -0.121$, $N = 100$, $p > .05$.

A strong correlation was observed between User training and education, and Organizational resistance correlation with $r = .544$, $N = 101$; $p < .05$. A correlation was observed with $r = .381$, $N = 100$; $p < .05$ between User training and education, and Project champion; a correlation between User training and education, and List of attributes for information used in the company (**After implementation** of the ERP system) with $r = .422$, $N = 101$; $p < .05$; between User training and education, and List of factors relevant to a company (**After** implementation of the ERP system) with $r = .447$, $N = 101$; $p < .05$ which shows a good relationship between factors. A small correlation was observed with $r = 0.171$, $N = 100$; $p > .05$, between User training and education, and List of attributes for information used in the company (**Before** implementation of the ERP system); and a weak correlation was observed with $r = 0.057$, $N = 100$; $p > .05$, between User training and education.

A positive relationship was observed with a correlation $r = .372$, $N = 100$; $p < .05$, between Organizational resistance and Project champion; $r = .389$, $N = 100$; $p < .05$, between Organizational resistance and List of attributes for information used in the company (**After** implementation of the ERP system); and $r = .362$, $N = 100$; $p < .05$, and between Organizational resistance and List of factors relevant to a company (**After** implementation of the ERP system). A small correlation was observed with $r = .114$, $N = 100$; $p > .05$, between Organizational resistance, and List of attributes for information used in the company (**Before** implementation of the ERP system). A weak correlation was observed between Organizational resistance and List of factors relevant to a company (**Before** implementation of the ERP system), with $r = 0.066$, $N = 100$; $p > .05$.

A Medium correlation $r = .401$, $N = 100$; $p < .05$, was identified with a positive relationship between Project champion, and List of attributes for information used in the company (**After implementation** of the ERP system). A relationship was observed between project champion, and List of factors relevant to a company (**After** implementation of the ERP system), with a small correlation of $r = .281$, $N = 100$, $p < .05$. A weak correlation was observed between Project champion, and List of attributes for information used in the company (**Before** implementation of the ERP system), with $r = 0.053$ $N = 99$; $p > .05$; and with Project champion, and List of factors relevant to a company (**Before** implementation of the ERP system), $r = 0.090$, $N = 99$, $p > .05$.

A strong positive correlation was observed between List of factors relevant to a company (**Before** implementation of the ERP system), and list of attributes for information used in the company (**Before** implementation of the ERP system), with a large correlation of $r = .509$, $N = 100$, $p < .05$. A good relationship was identified, with a medium correlation of $r = .418$, $N = 100$; $p < .05$, between List of attributes for information used in the company (**Before implementation**) of the ERP system, and List of attributes for information used in the company (**After implementation**) of the ERP system. List of factors relevant to a company (**After implementation** of the ERP system, and List of attributes for information used in the company (**Before implementation**) of the ERP system, shows a relationship with a small correlation of ($r = .273$, $N = 100$, $p < .05$).

A strong positive correlation was identified between list of attributes for information used in the company (**After implementation** of the ERP system), and List of factors relevant to a company (**After** implementation of the ERP system), with a large correlation of ($r = .698$, $N = 101$, $p < .05$). A weak negative correlation was identified with ($r = -0.003$, $N = 100$, $p > .05$), between list of attributes for information used in the company (**After** implementation of the ERP system), and List of factors relevant to a company (**Before** implementation of the ERP system); and another weak correlation was observed between and List of factors relevant to a company (**After** implementation of the ERP system), and List of factors relevant to a company (**Before** implementation of the ERP system, with a correlation of ($r = -0.044$, $N = 100$, $p > .05$), there is a negative relationship between these factors.

Table 8.77: Non-parametric correlations



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Nonparametric Correlations																
Correlations																
			Vision_planning	Choice_ERP_system	Support_To_p_Management	Project_Management	Re_engineering	Communication	Training_Education	Organizational_Resistance	Project_Champion	Q3.4_BEFORE	Q3.4_AFTE R	Q3.5_BEFORE	Q3.5_AFTE R	
Spearman's rho	Vision_planning	Correlation Coefficient	1.000	.640**	.546**	.286**	.496**	.342**	.373**	.422**	.513**	0.183	.410**	0.078	.304**	
		Sig. (2-tailed)		0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.068	0.000	0.442	0.002
		N	101	101	101	100	100	101	101	101	101	100	100	101	100	101
	Choice_ERP_system	Correlation Coefficient	.640**	1.000	.507**	.401**	.386**	.347**	.364**	.366**	.410**	.331**	.489**	0.117	.397**	
		Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.245	0.000	
		N	101	101	101	100	100	101	101	101	100	100	101	100	101	
	Support_To_p_Management	Correlation Coefficient	.546**	.507**	1.000	.343**	.514**	.483**	.412**	.399**	.332**	0.134	.462**	-0.071	.400**	
		Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.001	0.185	0.000	0.485	0.000	
		N	101	101	101	100	100	101	101	101	100	100	101	100	101	

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Project_Management	Correlation Coefficient	.286**	.401**	.343**	1.000	.427**	.268**	.396**	.312**	.422**	.252*	.387**	0.133	.341**
	Sig. (2-tailed)	0.004	0.000	0.000		0.000	0.007	0.000	0.002	0.000	0.012	0.000	0.191	0.001
	N	100	100	100	100	100	100	100	100	100	99	100	99	100
Re_engineerin	Correlation Coefficient	.496**	.386**	.514**	.427**	1.000	.331**	.452**	.514**	.525**	0.133	.522**	0.035	.435**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.001	0.000	0.000	0.000	0.190	0.000	0.731	0.000
	N	100	100	100	100	100	100	100	100	100	99	100	99	100
Communication	Correlation Coefficient	.342**	.347**	.483**	.268**	.331**	1.000	.429**	.307**	.215*	0.151	.551**	-0.121	.530**
	Sig. (2-tailed)	0.000	0.000	0.000	0.007	0.001		0.000	0.002	0.032	0.134	0.000	0.230	0.000
	N	101	101	101	100	100	101	101	101	100	100	101	100	101
Training_Education	Correlation Coefficient	.373**	.364**	.412**	.396**	.452**	.429**	1.000	.544**	.381**	0.171	.422**	0.057	.447**
	Sig. (2-	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.089	0.000	0.574	0.000

		tailed)													
		N	101	101	101	100	100	101	101	101	100	100	101	100	101
Organizational_Resistance	Correlation Coefficient	.422**	.366**	.399**	.312**	.514**	.307**	.544**	1.000	.372**	0.114	.389**	0.066	.362**	
	Sig. (2-tailed)	0.000	0.000	0.000	0.002	0.000	0.002	0.000		0.000	0.259	0.000	0.513	0.000	
	N	101	101	101	100	100	101	101	101	100	100	101	100	101	
Project_Champion	Correlation Coefficient	.513**	.410**	.332**	.422**	.525**	.215**	.381**	.372**	1.000	0.053	.401**	0.090	.281**	
	Sig. (2-tailed)	0.000	0.000	0.001	0.000	0.000	0.032	0.000	0.000		0.603	0.000	0.375	0.005	
	N	100	100	100	100	100	100	100	100	100	99	100	99	100	
Q3.4_BEFORE	Correlation Coefficient	0.183	.331**	0.134	.252*	0.133	0.151	0.171	0.114	0.053	1.000	.418**	.509**	.273**	
	Sig. (2-tailed)	0.068	0.001	0.185	0.012	0.190	0.134	0.089	0.259	0.603		0.000	0.000	0.006	
	N	100	100	100	99	99	100	100	100	99	100	100	100	100	
Q3.4_AFTER	Correlation Coef	.410**	.489**	.462**	.387**	.522**	.551**	.422**	.389**	.401**	.418**	1.000	-0.003	.698**	

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	Sig. (2-taile d)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.979	0.000	
	N	101	101	101	100	100	101	101	101	100	100	101	100	101	
Q3.5_BEFO RE	Corr elati on Coef ficie nt	0.078	0.117	-0.071	0.133	0.035	-0.121	0.057	0.066	0.090	.509**	-0.003	1.000	-0.044	
	Sig. (2-taile d)	0.442	0.245	0.485	0.191	0.731	0.230	0.574	0.513	0.375	0.000	0.979		0.664	
	N	100	100	100	99	99	100	100	100	99	100	100	100	100	
Q3.5_AFTE R	Corr elati on Coef ficie nt	.304**	.397**	.400**	.341**	.435**	.530**	.447**	.362**	.281**	.273**	.698**	-0.044	1.000	
	Sig. (2-taile d)	0.002	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.005	0.006	0.000	0.664		
	N	101	101	101	100	100	101	101	101	100	100	101	100	101	

8.8 Gap Analysis

This section will focus on measuring quality of implementation and outcome, using as a list of attributes for information used in the company, rating the quality of each information attribute BEFORE implementation of the ERP, and the quality of each attribute AFTER implementation of the ERP system. The analysis will also focus on list of factors relevant to a company, rating the quality of each factor BEFORE implementation of the ERP, and the quality of each factor AFTER implementation of the ERP system. Gap analysis will illustrate the difference between before and after, this will be a suitable way of comparing the results in order to interpret.

8.8.1 List of attributes for information used in the company

Table 8.78, and Figure 8.24 Shows a gap analysis chart for List of attributes for information used in the company, before and after ERP implementation. It shows the gap in the following variables: Quantity, with the mean of 1.0200; Quality, mean of 1.1010; Relevance, with the mean of 1.1900; Timeless, with the mean of 1.3700; Reliability, with the mean of 1.3200; and Accuracy, with the mean of 1.3400. It is indicating positive results, as each variable has improved after the implementation of ERP, because all the mean values are above zero (mostly above +1). The larger the positive mean values, the better the results. All companies are meeting expectations after ERP implementation.

Table 8.78 :Gap Statistics: List of attributes

Statistics		Quantity	Quality	Relevance	Timeless	Reliability	Accuracy
N	Valid	100	99	100	100	100	100
	Missing	1	2	1	1	1	1
Mean		1.0200	1.1010	1.1900	1.3700	1.3200	1.3400
Std. Deviation		0.63532	0.69245	0.78746	0.84871	0.80252	0.84351

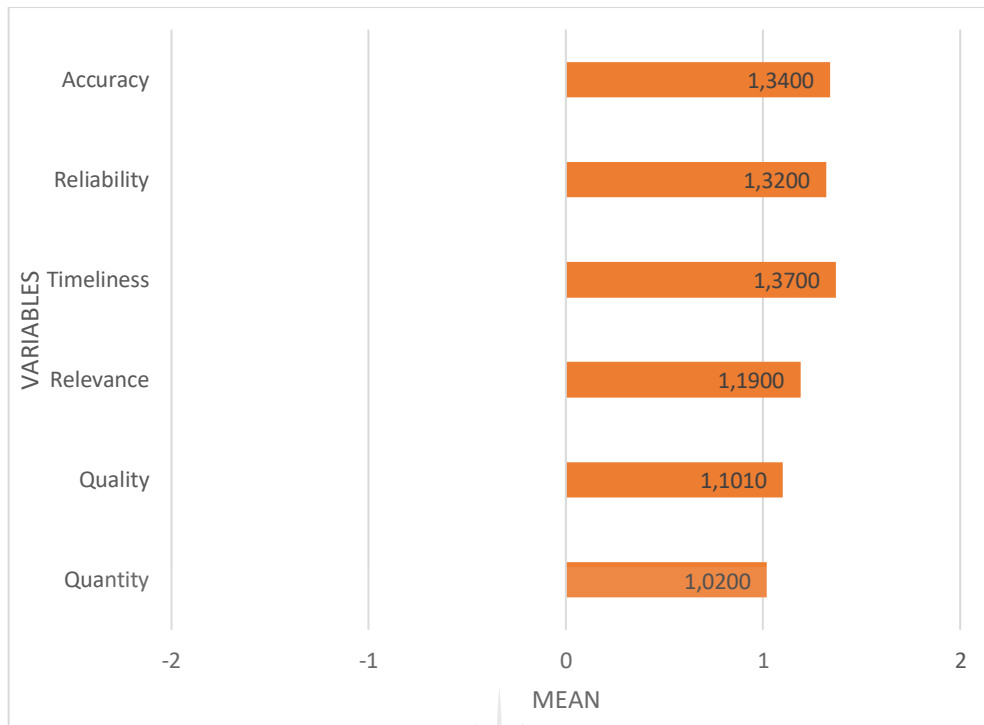


Figure 8.24: Gap analysis chart: List of attributes

8.8.2 List of factors relevant to a company

Table 8.79 and Figure 8.25 show a gap analysis chart for list of factors relevant to a company, rating the quality of each factor BEFORE implementation of the ERP, and the quality of each factor AFTER implementation of the ERP system. It shows the gap in the following list of factors relevant to a company: 3.5.1 (*Communication between the company and suppliers*), mean of **1.0800**; 3.5.2 (*Communication between the company and ERP vendors*), mean of **1.1600**; 3.5.3 (*Communication between the company and other partners*), mean of **1.1800**; 3.5.4 (*The business relationship between the company and suppliers*), mean of **1.1313**; 3.5.5 (*The business relationship between the company and ERP vendors*), mean of **1.2929**; 3.5.6 (*The business relationship between the company and other partners*), mean of **1.4388**; 3.5.7 (*Satisfaction of top management*), mean of **1.4742**; 3.5.8 (*Satisfaction of project managers*), mean of **1.4898**; 3.5.9 (*Satisfaction of employees*), mean of **1.4200**; 3.5.10 (*Efficiency of processes*), mean of **1.4343**; 3.5.11 (*Amount of waste generated by the company*), mean of **1.3776**; 3.5.12 (*Cash flow*), mean of **1.3711** , 3.5.13 (*Market share*), mean of **1.2143**; 3.5.14 (*Value added productivity*), mean of **1.2959**; 3.5.15 (*Profitability achieved by the company*), mean of **1.2449**; and 3.5.16 (*Turnover achieved by the company*), mean of **1.3021**. This is indicating positive results, each factor having improved after the implementation of ERP, because all the mean values are above zero (mostly above +1). The larger the positive mean values, the better the results. All companies are meeting expectations after ERP implementation

Table 8.79: Gap Statistics: List of factors

	N		Mean	Standard. Deviation
	Valid	Missing		
Q3.5.1_Gap	100	1	1.0800	0.64636
Q3.5.2_Gap	100	1	1.1600	0.78779
Q3.5.3_Gap	100	1	1.1800	0.75719
Q3.5.4_Gap	99	2	1.1313	0.91078
Q3.5.5_Gap	99	2	1.2929	0.98201
Q3.5.6_Gap	98	3	1.4388	0.98511
Q3.5.7_Gap	97	4	1.4742	0.99050
Q3.5.8_Gap	98	3	1.4898	1.05757
Q3.5.9_Gap	100	1	1.4200	1.03651
Q3.5.10_Gap	99	2	1.4343	1.00165
Q3.5.11_Gap	98	3	1.3776	1.15335
Q3.5.12_Gap	97	4	1.3711	1.07354
Q3.5.13_Gap	98	3	1.2143	1.04783
Q3.5.14_Gap	98	3	1.2959	0.97610
Q3.5.15_Gap	98	3	1.2449	0.89743
Q3.5.16_Gap	96	5	1.3021	0.97462

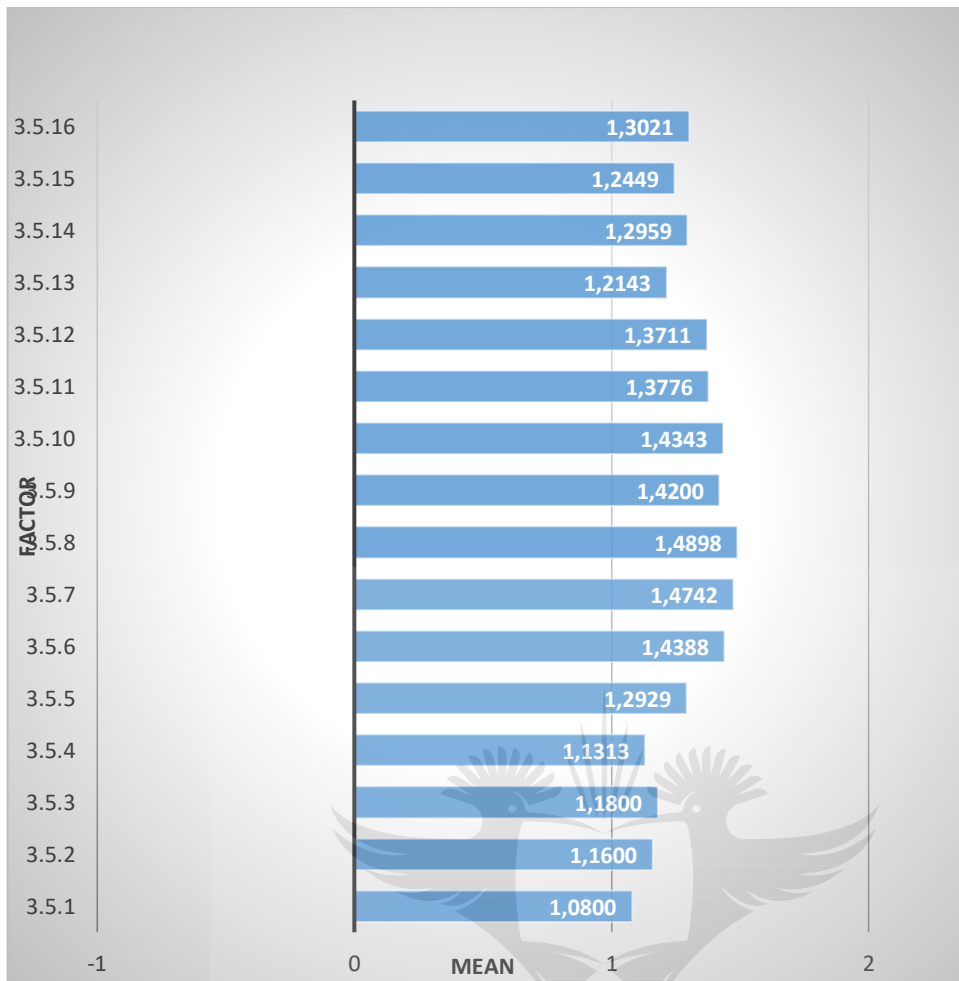


Figure 8.25: Gap analysis chart, List of factors

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8.9 Results from open ended responses

Table 8.80 below indicates feedback from 101 respondents regarding what has motivated their business organization to implement ERP into its business activities. The following feedback was provided:

Table 8.80: Please explain fully what has motivated your business organization to implement ERP into its business activities.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17	16.8	16.8	16.8
Administrative work and minimise human error	1	1.0	1.0	17.8
All information is compiled stored and merged into the ERP in one single system instead of being fragmented throughout the entire organization the data remains safe accurate complete and ready to share.	1	1.0	1.0	18.8
Any business today is only as efficient as the software backbone that connects and supports its various functions from behind the scene to the more visible client activities	1	1.0	1.0	19.8
Because ERP is a flexible system which will yield positive results	1	1.0	1.0	20.8
Because the ERP comes with multiple modules.	1	1.0	1.0	21.8
Better communication skills between suppliers and manufacturers.	1	1.0	1.0	22.8
Can't read.	1	1.0	1.0	23.8
Cost reduction reduce time and introduce new technology.	1	1.0	1.0	24.8
Cost reduction business process standardization	1	1.0	1.0	25.7
Cost savings process management and flow data recording for future reference	1	1.0	1.0	26.7
Customer fulfilment meet the demand improve productivity.	1	1.0	1.0	27.7
ERP was implemented as an easier user friendly system that would greatly enhance the company's abilities communicate with our vendors IRO loading them onto the system and ensuring payments are linked to their business.	1	1.0	1.0	28.7
For cost savings purpose	1	1.0	1.0	29.7
For growth and improvement	1	1.0	1.0	30.7
For optimization and standardization.	1	1.0	1.0	31.7
For sustainability purposes	1	1.0	1.0	32.7
Global standard	1	1.0	1.0	33.7
Global system that had to be implemented locally	1	1.0	1.0	34.7
Help with resources planning and providence to be able to carry out all planned for a financial year.	1	1.0	1.0	35.6

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I believe that motivated the business to implement ERP was to move into a paperless business that could reduce errors and save the organisation money.	1	1.0	1.0	36.6
Improve business process	1	1.0	1.0	37.6
Improve efficiency and effectiveness	1	1.0	1.0	38.6
Improve productivity	1	1.0	1.0	39.6
Improved planning processes required as well as more accurate planning	1	1.0	1.0	40.6
Improves performance and produces accurate information results.	1	1.0	1.0	41.6
Improving customer service was the main reason of motivation of implementation of ERP.	1	1.0	1.0	42.6
In order to have a seamless more effective system for certain operations in the organisation.	1	1.0	1.0	43.6
In order to reduce waste and improve integration of systems in general.	1	1.0	1.0	44.6
Increase productivity and save costs.	1	1.0	1.0	45.5
Increase profit margins reduce work scope	1	1.0	1.0	46.5
Integrated systems.	1	1.0	1.0	47.5
It will simplify the process reduce errors and simplify the convert process.	1	1.0	1.0	48.5
Lack of data organization and accessibility as it becomes difficult to plan for new projects.	1	1.0	1.0	49.5
Make process better.	1	1.0	1.0	50.5
Management took the decision.	1	1.0	1.0	51.5
My organisation has implemented ERP because it will assist in easy management of the day-to-day procedure.	1	1.0	1.0	52.5
My organization used to use multiple standalone systems for payroll finance and procurement SAP provided these modules in one system.	1	1.0	1.0	53.5
Our business implemented sprint so that we can see the whereabouts of the train its location to trace the loads.	1	1.0	1.0	54.5
Process system improvement especially were efficiency is concerned.	1	1.0	1.0	55.4
Productivity improvement.	1	1.0	1.0	56.4
Reduce cost.	1	1.0	1.0	57.4
Reducing cost while improving productivity.	1	1.0	1.0	58.4
Resources allocation planning.	1	1.0	1.0	59.4
Save costs time process to be more efficient and effective	1	1.0	1.0	60.4
The advantages that brings of a business.	1	1.0	1.0	61.4
The benefits it posed for the organisation.	1	1.0	1.0	62.4
The business recognised that orders to remain competitive in the market it unessential to implement an effective ERP system which provided relevant date and metrics.	1	1.0	1.0	63.4

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The business was motivated to implement ERP system in order to improve efficiency reliability accuracy and quality of information relating to planning material requirements accuracy and speed.	1	1.0	1.0	64.4
The company was looking for a system that would save them money increase accuracy competitiveness and customer service and include flexibility	1	1.0	1.0	65.3
The need for integrated planning and management across business units thereby minimizing resource requirements.	1	1.0	1.0	66.3
The previous ERP system was not working to the best of benefit to the company.	1	1.0	1.0	67.3
The system was introduced to reduce time and cost.	1	1.0	1.0	68.3
The type of application and systems the form users.	1	1.0	1.0	69.3
They use ERP system to check the availability of books and shelves of books that are not occupied.	1	1.0	1.0	70.3
To achieve integrated business processes and systems.	1	1.0	1.0	71.3
To achieve integrated business processes systems.	1	1.0	1.0	72.3
To align with industry best practices and further efficiently manage SCM and logistics value chain processes.	1	1.0	1.0	73.3
To automate administrative work and minimise human error.	1	1.0	1.0	74.3
To be able to plan better improve service delivery and in turn gain market share.	1	1.0	1.0	75.2
To better manage inventory to prevent shrinkage to increase profit to have more efficiency in the operations.	1	1.0	1.0	76.2
To better, manage inventory to prevent product shortages.	1	1.0	1.0	77.2
To change the organisational structure to fit the application of organisational functions.	1	1.0	1.0	78.2
To enhance control on costs by planning materials is production.	1	1.0	1.0	79.2
To ensure accuracy efficiency and reliability of business processes.	1	1.0	1.0	80.2
To ensure that business goals are managed and organized effectively.	1	1.0	1.0	81.2
To ensure that the correct resources are aligned in terms of the organisations requirements.	1	1.0	1.0	82.2
To get formerly and accurate information and develop a very good relationship with customer by satisfying them.	1	1.0	1.0	83.2
To have history data of events to have coordination in terms of processes	1	1.0	1.0	84.2

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To improve business performance.	1	1.0	1.0	85.1
To improve on our turnaround strategy by reducing time taken sourcing for goods or service e.g. from the end user placing requisition to the buyer receiving the requisition and action it by sourcing quotation	1	1.0	1.0	86.1
To improve the strategic focus of the company and employees.	1	1.0	1.0	87.1
To integrate and align business process for efficient delivery of company objectives for considerate business processing analytical and reporting purpose.	1	1.0	1.0	88.1
To integrate to the existing system and increase productivity.	1	1.0	1.0	89.1
To keep control over all goods received used and scrapped record of goods coming and going.	1	1.0	1.0	90.1
To mainly automate the manual process and improve daily activities just so the business becomes efficient and effective.	1	1.0	1.0	91.1
To make profit while reducing cost.	1	1.0	1.0	92.1
To make sure that productivity improves.	1	1.0	1.0	93.1
To save money and to plan without wastage.	1	1.0	1.0	94.1
To save money and to plan without wastage.	1	1.0	1.0	95.0
To standardize processes.	1	1.0	1.0	96.0
To streamline desperate systems and processes onto a common platform in order to maximize profits and minimise costs.	1	1.0	1.0	97.0
To sustain the business in a long term	1	1.0	1.0	98.0
Upgrading organizational system and the shift.	1	1.0	1.0	99.0
What motivated the organization to choose an ERP software was that information will be integrated easily accessible and it is more efficient?	1	1.0	1.0	100.0
Total	101	100.0	100.0	

The Table 8.81 below shows feedback from the respondents regarding description of quality of the ERP training when the company started to work with the new ERP system.

Table 8.81: Describe the quality of the ERP training when the company started to work with the new ERP system.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid .	21	20.8	20.8	20.8
All employees get the relevant training regarding the ERP.	1	1.0	1.0	21.8
Can't read	1	1.0	1.0	22.8
Employees are trained on regular basis to have the familiarity of the use of ERP	1	1.0	1.0	23.8
ERP training at my organization was intensive and more derailed it was simplified so that every trainee would understand at some point it was one on one training to cover all aspects of the work done accord.	1	1.0	1.0	24.8
ERP training is a critical component to a successful implementation it helps to detect and remove defects.	1	1.0	1.0	25.7
ERP training was sufficient	1	1.0	1.0	26.7
Excellent	2	2.0	2.0	28.7
Excellent training offered	1	1.0	1.0	29.7
Good	2	2.0	2.0	31.7
Good quality	1	1.0	1.0	32.7
Good quality but needs improvements	1	1.0	1.0	33.7
Good quality when fed with accurate data	1	1.0	1.0	34.7
Good quality with process and procedures	1	1.0	1.0	35.6
High quality and intensive because it was specific to each ones job function	1	1.0	1.0	36.6
I don't know I was not employed	1	1.0	1.0	37.6
I would say average a lot of the things were rushed in the hope that we would push implementation forward.	1	1.0	1.0	38.6
Implemented E -learning tool.	1	1.0	1.0	39.6
Improve worker quality reduce errors.	1	1.0	1.0	40.6
In depth training for super users.	1	1.0	1.0	41.6
Informal training some people got training from other workers.	1	1.0	1.0	42.6
Intensive thorough and effective.	1	1.0	1.0	43.6
Involved people who were eager to learn.	1	1.0	1.0	44.6
It can be improved to a higher level.	1	1.0	1.0	45.5
It helps the employees to use their system effectively when providing the service.	1	1.0	1.0	46.5
It was below average.	1	1.0	1.0	47.5

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It was challenging at first because it's a new invention of technology system.	1	1.0	1.0	48.5
It was hard to cope but it was mostly effective.	1	1.0	1.0	49.5
It was intense for the key people of the process implementation it was basic but good for all other workers.	1	1.0	1.0	50.5
It was not as good as expected.	1	1.0	1.0	51.5
It was poor.	1	1.0	1.0	52.5
It was quite adaptable.	1	1.0	1.0	53.5
It was very good	1	1.0	1.0	54.5
Moderate progress	1	1.0	1.0	55.4
Moderate training provided with little SOPs in place	1	1.0	1.0	56.4
More organised and controlled	2	2.0	2.0	58.4
Much better as there is better communication	1	1.0	1.0	59.4
N/A	1	1.0	1.0	60.4
N/A was not employed by the company when ERP was first implemented however I have learned even after being employed after the implementation people often need to teach themselves how to work around the system	1	1.0	1.0	61.4
None was provided	1	1.0	1.0	62.4
Not easy to adapt to because of changes but good quality	1	1.0	1.0	63.4
Not effective	1	1.0	1.0	64.4
Not sure as I was not involved	1	1.0	1.0	65.3
Ok	1	1.0	1.0	66.3
Only selected power users we given training by the ERP experts	1	1.0	1.0	67.3
Quality of training was not the best as it was being conducted remotely	1	1.0	1.0	68.3
Satisfy requirements through the production part approval process module integrated with audit and checklist modules	1	1.0	1.0	69.3
Systems can generate report on time minimizing the time in preparing	1	1.0	1.0	70.3
The company had a year's training with all parties before everyone was integrated into it.	1	1.0	1.0	71.3
The ERP specialist exemplified into detail as to what is this ERP system how it works what are the advantages and disadvantages and how to use it as end users of the system	1	1.0	1.0	72.3
The ERP training was efficient trainer were very qualified	1	1.0	1.0	73.3
The implementation leads to positive user perceptions	1	1.0	1.0	74.3

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The quality control and quality assurance is the most important point for successful and effective ERP system	1	1.0	1.0	75.2
The quality lacked a bit of wide range knowledge to cover the whole system	1	1.0	1.0	76.2
The quality of ERP training was average	1	1.0	1.0	77.2
The quality of training was excellent and easy to follow the moderator makes use of practical example employees were given an opportunity to do practical as much as they can this text run was available to	1	1.0	1.0	78.2
The quality of training was good for items that were taught workers were not taught how to resolve issues when issues	1	1.0	1.0	79.2
The quality of training was good for items that were taught workers were not taught how to resolve issues when issues comes about	1	1.0	1.0	80.2
The quality was adequate	1	1.0	1.0	81.2
The quality was bad because the workers were not familiar with the system	1	1.0	1.0	82.2
The quality was into standard because they were struggling to transfer information from this old system to the new system	1	1.0	1.0	83.2
The quality was moderate	1	1.0	1.0	84.2
The quality was tremendous but was phased in to allow employees to get used to the system refresher courses were offered and are ongoing	1	1.0	1.0	85.1
The system was explained thoroughly with workshops and trainings organized for the employees	1	1.0	1.0	86.1
The training quality should have been higher the timing of the training sessions should have been planned more effectively	1	1.0	1.0	87.1
The training was fairly fair the ERP trainer did not really focus on ERP	1	1.0	1.0	88.1
The training was not well carried it to the understanding level of the general worker	1	1.0	1.0	89.1
The training was provided but it was not intensive enough to remember	1	1.0	1.0	90.1
The training was well facilitated there were clear alignments between top management and lower level personnel	1	1.0	1.0	91.1
There was an accredited consulting company which and together with our company experts they ensured quality training to all relevant employees	1	1.0	1.0	92.1

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There was no sufficient time allocated for trainings	1	1.0	1.0	93.1
Thorough comprehensive and role specific focus	1	1.0	1.0	94.1
Training was okay could be better	1	1.0	1.0	95.0
User resistance it went very well but with challenges	1	1.0	1.0	96.0
User training quality provided was very beneficial to the company the quality of content was satisfactory	1	1.0	1.0	97.0
Very effective	1	1.0	1.0	98.0
Very well put together user friendly	1	1.0	1.0	99.0
Well organized	1	1.0	1.0	100.0
Total	101	100.0	100.0	



The table below shows feedback from 101 respondents, regarding the implementation of the ERP system.

Table 8.82: Elaborate on the implementation of the ERP system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.	30	29.7	29.7	29.7
	A more focused approach with clearly defined deliverables is essential especially with a phased implementation approach failing to clearly define implementation milestones and objectives can lead to problems	1	1.0	1.0	30.7
	Aim is to integrate business processes in one system it should also help employees to adapt the daily changes business practices	1	1.0	1.0	31.7
	All hands were informed and eagerly awaiting the 1st day of going operational success was 1st measured by our readiness to use the system while confidence was building up the rest was a walk in the park	1	1.0	1.0	32.7
	All necessary steps and procedures were followed	1	1.0	1.0	33.7
	All stages were followed and used in the implementation process introduction 1st until live final stage	1	1.0	1.0	34.7
	All the info are captured in the system which makes it more efficient the project team dealt with the transfer of all the info	1	1.0	1.0	35.6
	All the info are captured in the system which makes it more efficient the project team dealt with the transfer of the info	1	1.0	1.0	36.6
	Already from the first phase it was not properly done the planning	1	1.0	1.0	37.6
	Can't read	1	1.0	1.0	38.6
	Change management and training was done excellently and the whole company was involved all structures management was involved	1	1.0	1.0	39.6
	Consultation with all stakeholders management and employees	1	1.0	1.0	40.6
	Data solution cross functional team involvement full support from IT services	1	1.0	1.0	41.6

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Data transfer was loaded by the team with numerous errors which resulted in numerous actions being taken by workers to correct highly unproductive	1	1.0	1.0	42.6
Data transfer was loaded by the team with numerous errors which resulted in numerous actions being taken by workers to correct highly unproductive	1	1.0	1.0	43.6
Development and approval of business case procurement of ERP systems implementation of key business modules at SCM and logistics roll out to entire company	1	1.0	1.0	44.6
ERP implementation required appropriate funds to be assigned for the training as it is expensive	1	1.0	1.0	45.5
ERP is an attempt to integrate all functions across the company to a single computer system that can serve all those functions across a company to a single ERP implementation	1	1.0	1.0	46.5
ERP system involves installation of software's moving of data such as financial data over to the new system and configurations	1	1.0	1.0	47.5
ERP tend to be a difficult approach to follow because it's a new system	1	1.0	1.0	48.5
Everyone would be introduced to the system.	1	1.0	1.0	49.5
First, identify problems that ERP provides vast solution to change management check infrastructure do customization then end with technology and knowledge transfer.	1	1.0	1.0	50.5
Good planning with management.	1	1.0	1.0	51.5
I do not have much knowledge in that sense I do not work with the system.	1	1.0	1.0	52.5
I was trained on how to use it was not around when it was first implemented.	1	1.0	1.0	53.5
If it is about implementing a system that addresses resources, planning within an organisation it looks at resources from staff to materials.	1	1.0	1.0	54.5
Implementation was difficult at first quite slow however picked up towards the end.	1	1.0	1.0	55.4
Implementation was not 100% but it went well.	1	1.0	1.0	56.4
Implementation was slow lack of sharing of changes and improvements of ERP system.	1	1.0	1.0	57.4

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Implementing was slow due to the large amount of master data required.	1	1.0	1.0	58.4
Integration of multiple ERP into 1	1	1.0	1.0	59.4
Introduced by ERP vendors well planned and implemented	1	1.0	1.0	60.4
Is a dynamic process due to ever changing requirements of clients or business stakeholders	1	1.0	1.0	61.4
It currently plays the integration role however the raw data remains suspect as an input of the system or variable rather	1	1.0	1.0	62.4
It has improved the companies	1	1.0	1.0	63.4
It involves the installation the software configuring over to new systems.	1	1.0	1.0	64.4
It took time because not everyone was able to understand the purpose	1	1.0	1.0	65.3
It was a costly exercise that involved years of planning and transition	1	1.0	1.0	66.3
It was a long process that was not easily accepted	1	1.0	1.0	67.3
It was difficult to understand at first	1	1.0	1.0	68.3
It was due to the company growth	1	1.0	1.0	69.3
It was in the form of an online software where members of the organization alongside end users can access certain functionalities of the system.	1	1.0	1.0	70.3
It was ok	1	1.0	1.0	71.3
It was ok though all users are still in need of extra training	1	1.0	1.0	72.3
Management wanted to see end results and individuals where not yet on par with the system usage	1	1.0	1.0	73.3
N/A	1	1.0	1.0	74.3
N/A I was not employed by the company at the time	1	1.0	1.0	75.2
Natural roll out strategy was used	1	1.0	1.0	76.2
Not implemented	1	1.0	1.0	77.2
Only a small group of people were taken for training and they were expected to train the rest of the staff it was not effective, as they could not answer a lot of technical questions posed by staff members.	1	1.0	1.0	78.2
Protect team implementation teams implemented the system.	1	1.0	1.0	79.2
SAP we are implementing the PRVs system on SAP showing downtime RRV faults.	1	1.0	1.0	80.2
Scope the project what does the business want design the solution how will achieve 1 best functional and technical user acceptance training.	1	1.0	1.0	81.2

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Selection determination of ERP selecting best system planning preparations for successful ERP planning testing.	1	1.0	1.0	82.2
Slow with glitches here and there.	1	1.0	1.0	83.2
Started with change management aid a lot of training sessions.	1	1.0	1.0	84.2
Support from all stakeholders well implemented.	1	1.0	1.0	85.1
Team was appointed led by a project manager plan strategy was first shared with top management	1	1.0	1.0	86.1
The company installed the infrastructure and the ERP experts trained every user back up support was available to address queries	1	1.0	1.0	87.1
The ERP development was conducted on a year's period with expect ERP consultants involved	1	1.0	1.0	88.1
The external consultants were appointed to implement the ERP system with the internal project manager ensuring that there is a liaison between the consultants and the internal technical team there was less.	1	1.0	1.0	89.1
The implementation of SAP was not an easy project first to find the correct service provider who has the right accreditation was not easy after securing the right service provider the process was much better.	1	1.0	1.0	90.1
The implementation of this system makes it easy for managers to identify mistakes within the organisations operations as well as to improve the quality of work its products.	1	1.0	1.0	91.1
The implementation was piloted at head office just for three months then rolled out nationally the project management tools were managed properly but there was limited communication to employees at lower level	1	1.0	1.0	92.1
The implementation was up to scratch	1	1.0	1.0	93.1
The new system was implemented without lower or junior being told	1	1.0	1.0	94.1
The procedure that was followed was strategic planning procedure review data collection and clean up training and testing go live and evaluation	1	1.0	1.0	95.0
There was no implementation	1	1.0	1.0	96.0
They had implemented the LX system very well and its working fine now	1	1.0	1.0	97.0

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To make the system more faster	1	1.0	1.0	98.0
User resistance challenging but well implemented.	1	1.0	1.0	99.0
Work or most activities are done on ERP system	1	1.0	1.0	100.0
Total	101	100.0	100.0	



The Table below shows feedback from respondents, regarding the critical factors that have impact on ERP system implementation

Table 8.83: Explain the critical factors that have impact on ERP system implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.	25	24.8	24.8	24.8
	Accurate work minimum error and easier to collect data	1	1.0	1.0	25.7
	Adhering to treating scheduling and individuals to participate	1	1.0	1.0	26.7
	Business process and reengineering	1	1.0	1.0	27.7
	Change management was a key success factor	1	1.0	1.0	28.7
	Changing of the organisational system	1	1.0	1.0	29.7
	Clear project scope and business expectations competent technical and functional expert extensive training change management executive support and championing process re-engineering where applicable	1	1.0	1.0	30.7
	Commitment	1	1.0	1.0	31.7
	Communication change unclear plans	1	1.0	1.0	32.7
	Communication training lack of training	1	1.0	1.0	33.7
	Communication was vital and consensus between different business units leadership had to be on the forefront in directing the project	1	1.0	1.0	34.7
	Complete understanding and competence for user ensure that we have the right specification to get right deliverables	1	1.0	1.0	35.6
	Data accuracy	1	1.0	1.0	36.6
	Data accuracy focused performance excellent project management commitment by top management	1	1.0	1.0	37.6
	Data accuracy independence finance	1	1.0	1.0	38.6
	Data integrity feed the system with correct information because we can mislead the organisation if the info is correct.	1	1.0	1.0	39.6
	Data quality availability of resources end users to test and understand proper business processes end to end mapping	2	2.0	2.0	41.6
	Delayed payments of invoices to stakeholders.	1	1.0	1.0	42.6
	Dependency there we multiple teams involved in the implementation skills lack of resources that understand the overall systems budget unable to afford skilled resources	1	1.0	1.0	43.6
	Education and training	1	1.0	1.0	44.6

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Effective communication effective management and performance evaluation is containing ERP implementation planning through utilising the project management lifecycle theory and analysing various stages of implementation	1	1.0	1.0	45.5
Employee buy in and acceptance change management	1	1.0	1.0	46.5
Employees in valued the vendor used for the implementation data used	1	1.0	1.0	47.5
Employees not understanding of the system which was expensive to implement	1	1.0	1.0	48.5
Employees resistance to change and adapt	1	1.0	1.0	49.5
ERP must match the organization run of the business needs ERP vendors must demonstrate their products and show that it meets the needs of the organisation	1	1.0	1.0	50.5
I believe that factors include networks issues what we are still experiencing	1	1.0	1.0	51.5
I think the managers and employees that use it then have impact on the system	1	1.0	1.0	52.5
Identification of old system weakness gaps	1	1.0	1.0	53.5
Incomplete scoping of the business requirements incomplete understanding of existing business date business process re-engineering continual change of focus and deliverables	1	1.0	1.0	54.5
Involvement of personnel communication project management consultation sufficient budget	1	1.0	1.0	55.4
It encourages and supports a prospects of the company that not only support cost control	1	1.0	1.0	56.4
It provides clean organized data and easy to use and saves company some time	1	1.0	1.0	57.4
Lack of proper training sharing the significance of the system with all employees to minimise resistance	1	1.0	1.0	58.4
Low down time easily manageable	1	1.0	1.0	59.4
Managerial	1	1.0	1.0	60.4
Managers approval stuff cooperation	1	1.0	1.0	61.4
Master date requirements have a large input as well as company with bag in	1	1.0	1.0	62.4
Minimum errors user resistance	1	1.0	1.0	63.4
Not sure as it was sort of new system only to ensure that training was given to relevant employees	1	1.0	1.0	64.4
On supply implementation was fine	1	1.0	1.0	65.3

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Personnel current system functions satisfaction	1	1.0	1.0	66.3
Poor planning poor management personnel	1	1.0	1.0	67.3
Poor results if not implemented correctly e.g. if employee does not pay attention to detailed when processing information it will provide poor output	1	1.0	1.0	68.3
Project management time line adherence IT system full support communication change management programmes	1	1.0	1.0	69.3
Project planning and vision	1	1.0	1.0	70.3
Proper communication user resistance	1	1.0	1.0	71.3
Requisitions and payments are efficiently handled resources are well managed in the logistics and plant modules analyse are easy for reporting on financial performance and other functions	1	1.0	1.0	72.3
Resistance	1	1.0	1.0	73.3
Resistance from staff inability to manage the system	1	1.0	1.0	74.3
Resistant to change lack of training and change us really the big problem	1	1.0	1.0	75.2
Skill of the employees quality of the raw data variables of system accessibility of the system to all relevant employees coupled with intensive training	1	1.0	1.0	76.2
Skilled resources understanding scope	1	1.0	1.0	77.2
Skills it is knowledge that in an organisation	1	1.0	1.0	78.2
Staff eagerness	1	1.0	1.0	79.2
Support from top management project management communication training and education.	1	1.0	1.0	80.2
Teething problems were challenges that were influenced by vendor identification and verification results were immediately available as it had to go through a process whereby confirmation of due processes we	1	1.0	1.0	81.2
The critical factors are time quality of training of users efficiency of the system buy in from employees users managing change financial backing and top management commitment	1	1.0	1.0	82.2
The data fed to the system it must be of high quality	1	1.0	1.0	83.2
The technical expertise were too far in Spain to be precise and the local team was not equipped to handle all the technical queries that came	1	1.0	1.0	84.2
There is aware clear understanding of the strategic more clear data accuracy excellent teamwork	1	1.0	1.0	85.1

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They normally use MRP it is highly effective and easy to use	1	1.0	1.0	86.1
Time training cost	1	1.0	1.0	87.1
Time training participation of employees	1	1.0	1.0	88.1
Top management support proper training	1	1.0	1.0	89.1
Training	2	2.0	2.0	91.1
Training and technical support	1	1.0	1.0	92.1
Training of personnel sufficient technical expertise	1	1.0	1.0	93.1
Training technical support online systems	2	2.0	2.0	95.0
Understanding of the system and its benefits	1	1.0	1.0	96.0
Vision and planning of the project choice of an ERP project	1	1.0	1.0	97.0
When the people don't work together in different departments will work out anything without discussing the changes with each other	1	1.0	1.0	98.0
While the software alone is a major investment the implementation process cost nearly four times as much the company had to take into account the cost of manpower and time necessary for a successful deployment	1	1.0	1.0	99.0
You need to have a clear project scope it is important to minimize or avoid customisation	1	1.0	1.0	100.0
Total	101	100.0	100.0	

The table below indicate feedback from respondents, regarding the managerial factors which have impacted on the ERP system implementation

Table 8.84: Describe the managerial factors which have impacted on the ERP system implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.	30	29.7	29.7	29.7
	A detailed budget outlining the money available to purchase and implement an ERP is necessary.	1	1.0	1.0	30.7
	Adhering to the user's issues and implementing solution to the system by updating the system.	1	1.0	1.0	31.7
	Business sustainability	1	1.0	1.0	32.7
	Capital it is amount of lessons that an organisation have	1	1.0	1.0	33.7
	Commitment and support from project managers	1	1.0	1.0	34.7
	Commitment by top management	1	1.0	1.0	35.6
	Critical leadership and skill development for all new employees	1	1.0	1.0	36.6
	Detailed as above	2	2.0	2.0	38.6
	Determining risk through forecast remedial planning for gaps identified	1	1.0	1.0	39.6
	Easy of access to management reports business continuity from centralized data perspective analyse are easy for reporting on financial performance and other functions	1	1.0	1.0	40.6
	Factors are managing of change by management decision making and utilizing of output from ERP system	1	1.0	1.0	41.6
	Good communication skills	1	1.0	1.0	42.6
	I supply them with quick info included to carry out some tasks	1	1.0	1.0	43.6
	I think there is still grey areas who's responsible for what a lot expected of which source of the systems specs are generic	1	1.0	1.0	44.6
	I am not in the managerial position	1	1.0	1.0	45.5
	Information is readily available and similarly integration wherein a single view is provided for finance HR and procurement processes.	1	1.0	1.0	46.5
	Lack of feedback from managers do not encourage employees to be innovative	1	1.0	1.0	47.5
	Lack of involvement	1	1.0	1.0	48.5
	Lack of support	1	1.0	1.0	49.5
	Lack of training	1	1.0	1.0	50.5
	Leadership	1	1.0	1.0	51.5

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Leadership communication authority	1	1.0	1.0	52.5
Leadership project leaders supervisors	2	2.0	2.0	54.5
Management could influence understanding and importance of ERPs	1	1.0	1.0	55.4
Management has to sign off all good achieved to all good needed budget plan easier	1	1.0	1.0	56.4
Management were not regularly communicating to the employers during the transition phase the communication was often done on high level	1	1.0	1.0	57.4
Managers did not understand the system at first and it cause more confusion to employees	1	1.0	1.0	58.4
Managers have a huge role to play in cascading the projects objective	1	1.0	1.0	59.4
Monitoring has become the order of the day in as much as a lot of information is available to experience and even change the settings if there is any abnormal behaviour outside the parameters	1	1.0	1.0	60.4
N/A	2	2.0	2.0	62.4
N/A I was not employed by the company at that time	1	1.0	1.0	63.4
Not applicable as I am not in a managerial position	1	1.0	1.0	64.4
Not enough knowledge to commands further on this	1	1.0	1.0	65.3
Not sure	2	2.0	2.0	67.3
Organized punctual transparent communication	1	1.0	1.0	68.3
Poor communication from top management to employees resistance from old management not willing to accept new challenge	1	1.0	1.0	69.3
Poor knowledge and willingness to learn	1	1.0	1.0	70.3
Pre planning for their existing financial and operational performance planning setup and re-engineering system design configuration and testing installation and go live	1	1.0	1.0	71.3
Procedures SOP	1	1.0	1.0	72.3
Project champion	1	1.0	1.0	73.3
Project champion top management support	1	1.0	1.0	74.3
Regular audits required for the system to improve quality of system access to non-function employees e.g. project managers in order to improve efficiency	1	1.0	1.0	75.2

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Senior managers could have been a bit rigid on the topic of the use of the system as a lot of times when the new system was not working staff members defaulted to the old system	1	1.0	1.0	76.2
Sponsorship and top management support	1	1.0	1.0	77.2
Supervision of processing and general use of system reporting on pros and cos of system to initiate the necessary updates and or changes	1	1.0	1.0	78.2
Support from the management by encouraging staff to use the system	1	1.0	1.0	79.2
Support to both facilities and trainers by providing confidence training rooms and allowing before to attend session	1	1.0	1.0	80.2
Support with the implementation process	1	1.0	1.0	81.2
Taking decision without looking at impacts that will factor the of paying invoices using at the system	1	1.0	1.0	82.2
The approval of managers played a huge factor	1	1.0	1.0	83.2
The dedication and involvement of top management had a positive impact	1	1.0	1.0	84.2
The designed solution must be owned by the business identifying additional enhancement to improve solutions fit for the business embroiling change and best practise staff training	1	1.0	1.0	85.1
The system allows for early detection of any deviation on all processes and managers are given a chance to correct them gives managers a departmental overview and identifies KPIs	1	1.0	1.0	86.1
The system can drive inefficiency as users try to find ways to continue to complete their tasks while populating the system for the benefit of others	1	1.0	1.0	87.1
The top management did not allocate the proper budget for implementing ERP	1	1.0	1.0	88.1
There are none because the subordinates are the ones who feed the system and the subordinates are the ones who draw the report	1	1.0	1.0	89.1
There is a great level of commitment in top management there is work focused performance measures	1	1.0	1.0	90.1
There was a lack of a full buy in from out managers which portrait negatively to this lower level employees not committed to the activities around the implementation	1	1.0	1.0	91.1
There was a lack of coaching as well as a lack of delegation	1	1.0	1.0	92.1
Time factor and leadership	1	1.0	1.0	93.1

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Too much complexity was scoped into the system unwillingness to rethink the way the business processes work unrealistic expectations from the project team	1	1.0	1.0	94.1
Top management support	2	2.0	2.0	96.0
Top management support support from project managers support from IT managers	1	1.0	1.0	97.0
Top managers and protect managers that manage the entire system	1	1.0	1.0	98.0
Training communication	1	1.0	1.0	99.0
Willingness to engage with the work force about the implementation	1	1.0	1.0	100.0
Total	101	100.0	100.0	



The table below indicate feedback from respondents, regarding the current ERP framework that is efficiently implemented by their companies.

Table 8.85: The current ERP framework is efficiently implemented by your company. Describe your response to this statement.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.	31	30.7	30.7	30.7
	Can't read	1	1.0	1.0	31.7
	ERP effectively implemented to my organisation and there is improvement	1	1.0	1.0	32.7
	ERP SAP is very efficient the results are 99% accurate and easy to work with and it save time you can design report the way you want as long as you have the consultant on site SAP is user friendly it gives	1	1.0	1.0	33.7
	Has it been tested before to prove that it can be reliable	1	1.0	1.0	34.7
	I agree	1	1.0	1.0	35.6
	I agree with the stated as it has been able to cut costs and decrease waste	1	1.0	1.0	36.6
	I would not be able to tell if is efficiently successful since I did not do training through ERP or with the system at all	1	1.0	1.0	37.6
	I am not sure	1	1.0	1.0	38.6
	In progress the efficiency is evaluated step by step through monthly reviews and feedback	1	1.0	1.0	39.6
	It efficiently get controlled and summary	1	1.0	1.0	40.6
	It has not been implemented fully many modules are still in the testing phase	1	1.0	1.0	41.6
	It is a work in progress currently under implementation	1	1.0	1.0	42.6
	It is currently fully functional	1	1.0	1.0	43.6
	It is excellent and the organization has reaped benefits to include integration and cost saving whilst improving internal efficiencies	1	1.0	1.0	44.6
	It is implemented and making perfectly	1	1.0	1.0	45.5
	It is implemented and working perfectly	1	1.0	1.0	46.5
	It is working in every way and has proved efficient to the business and has generate profits	1	1.0	1.0	47.5
Less work has been done to evaluate the quality of ERP in its operative	1	1.0	1.0	48.5	

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Monitoring and control is measured continuously and changes are revised as and when required	1	1.0	1.0	49.5
N/A	5	5.0	5.0	54.5
N/A I was not employed by the company at that time	1	1.0	1.0	55.4
Needs improvement	1	1.0	1.0	56.4
No because some of the employees were struggling with his new system	1	1.0	1.0	57.4
No because we are not using the system to its optimum efficiency and thus not getting values worth	1	1.0	1.0	58.4
No it is very outdated and does not include many departments of the company	1	1.0	1.0	59.4
No it was not there was many problems with the system not working	1	1.0	1.0	60.4
Not 100% efficiently more training needed	1	1.0	1.0	61.4
Not effectively my understandings is there is communication breakdown information is not well passed between head office and site	1	1.0	1.0	62.4
Not efficient	1	1.0	1.0	63.4
Not necessarily because other staff members were not even aware of the ERP	1	1.0	1.0	64.4
Not really we are still on a trial and error phase a lot still needs to be test documented and made official	1	1.0	1.0	65.3
Not sure	2	2.0	2.0	67.3
On a weekly basis we run MRP to plan the stock required by production the ERP system is live as well as issuing to production also there is daily control and maintaining of shop orders and purchase orders	1	1.0	1.0	68.3
Process procedures and good planning	1	1.0	1.0	69.3
SAP system was well implemented steps and procedures were followed	1	1.0	1.0	70.3
Slowly getting there	1	1.0	1.0	71.3
Some features such as stock allocation from external hired warehouses was left out this remained a manually duty since the ERP system was not linked	1	1.0	1.0	72.3
SYSPRO was well prepared and implemented to increase business strategy	1	1.0	1.0	73.3
System was running well	1	1.0	1.0	74.3
The ERP framework was not efficiently implemented as there were certain issues that arose in the process of implementation	1	1.0	1.0	75.2

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The ERP system has increased our numbers and we are able to track back As to how we are doing financially as a company we are able to generate accurate information from the system as well as to customize it	1	1.0	1.0	76.2
The frame work seems to be fine also can unpack a lot of data and have it organized simply	1	1.0	1.0	77.2
The frame work was implemented all at once instead of systematically	1	1.0	1.0	78.2
The implementation of the ERP was a wise decision as we now have integrated system that focus on data integrity and security there was a need to phase out the old system that could not communicate to each	1	1.0	1.0	79.2
The workers are efficiently involved the essential resources for training is prioritized better sharing of information	1	1.0	1.0	80.2
There is a lot of room for improvement there is also a gap for change management with employees and the system itself is not optimized in use	1	1.0	1.0	81.2
There is always room for improvement ERP systems have built in best practise and this should be more fully embraced by the business instead of conducting business as usual	1	1.0	1.0	82.2
There should be an improvement as the implementation was not 100% accurate	1	1.0	1.0	83.2
This statement is false	1	1.0	1.0	84.2
To the company's best needs i.e. ability to organise edit and share data across various departments	1	1.0	1.0	85.1
True employees are able to capture procurement requisitions monitor and approve procurements process payments and manage our logistics resources such as fleet on ERP systems	1	1.0	1.0	86.1
True more needs to be done to train employees using the system and awareness session needed for all employees affected by the adoption of the system	1	1.0	1.0	87.1
True the ERP meets the requirements of the overall organisational requirements as well as those of the users	1	1.0	1.0	88.1
User friendly	1	1.0	1.0	89.1
Very well	1	1.0	1.0	90.1

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We are still resolving issues from legacy system almost 12 months later	2	2.0	2.0	92.1
Yes	1	1.0	1.0	93.1
Yes all process ae implemented and ensured that they spark to the framework all business units follow the new framework	1	1.0	1.0	94.1
Yes it is	1	1.0	1.0	95.0
Yes it is ERP is extremely helpful in the integration of our company data Human Resources logistics supply chain and finance functions there is a value in flow of processing information and analysing and re	1	1.0	1.0	96.0
Yes the company y explained and provided enough knowledge and information	1	1.0	1.0	97.0
Yes the company had moved mountains to ensure that this investment should meet and exceed its expectations by acceptance it put the company on par with other progressive corporations	1	1.0	1.0	98.0
Yes the project team was well organized and project progress was shared with the rest of the company	1	1.0	1.0	99.0
Yes they have an internal system called ax they used for paying their invoices	1	1.0	1.0	100.0
Total	101	100.0	100.0	

The table below indicate feedback from respondents on the critical factors that have impact on ERP system implementation

Table 8.86: Explain the critical factors that have impact on ERP system implementation

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid .	25	24.8	24.8	24.8
Accurate work minimum error and easier to collect data	1	1.0	1.0	25.7
Adhering to treating scheduling and individuals to participate	1	1.0	1.0	26.7
Business process and reengineering	1	1.0	1.0	27.7
Change management was a key success factor	1	1.0	1.0	28.7
Changing of the organisational system	1	1.0	1.0	29.7
Clear project scope and business expectations competent technical and functional expert extensive training change management executive support and championing process re-engineering where applicable	1	1.0	1.0	30.7
Commitment	1	1.0	1.0	31.7
Communication change unclear plans	1	1.0	1.0	32.7
Communication training lack of training	1	1.0	1.0	33.7
Communication was vital and consensus between different business units leadership had to be on the forefront in directing the project	1	1.0	1.0	34.7
Complete understanding and competence for user ensure that we have the right specification to get right deliverables	1	1.0	1.0	35.6
Data accuracy	1	1.0	1.0	36.6
Data accuracy focused performance excellent project management commitment by top management	1	1.0	1.0	37.6
Data accuracy independence finance	1	1.0	1.0	38.6
Data integrity feed the system with correct information because we can mislead the organisation if the info is correct	1	1.0	1.0	39.6
Data quality availability of resources end users to test and understand proper business processes end to end mapping	2	2.0	2.0	41.6
Delayed payments of invoices to stakeholders.	1	1.0	1.0	42.6
Dependency there we multiple teams involved in the implementation skills lack of resources that understand the overall systems budget unable to afford skilled resources	1	1.0	1.0	43.6
Education and training	1	1.0	1.0	44.6

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Effective communication effective management and performance evaluation is containing ERP implementation planning through utilising the project management lifecycle theory and analysing various stages of implementation	1	1.0	1.0	45.5
Employee buy in and acceptance change management	1	1.0	1.0	46.5
Employees in valued the vendor used for the implementation data used	1	1.0	1.0	47.5
Employees not understanding of the system which was expensive to implement	1	1.0	1.0	48.5
Employees resistance to change and adapt	1	1.0	1.0	49.5
ERP must match the organization run of the business needs ERP vendors must demonstrate their products and show that it meets the needs of the organisation	1	1.0	1.0	50.5
I believe that factors include networks issues what we are still experiencing	1	1.0	1.0	51.5
I think the managers and employees that use it then have impact on the system	1	1.0	1.0	52.5
Identification of old system weakness gaps	1	1.0	1.0	53.5
Incomplete scoping of the business requirements incomplete understanding of existing business date business process re-engineering continual change of focus and deliverables	1	1.0	1.0	54.5
Involvement of personnel communication project management consultation sufficient budget	1	1.0	1.0	55.4
It encourages and supports a prospects of the company that not only support cost control	1	1.0	1.0	56.4
It provides clean organized data and easy to use and saves company some time	1	1.0	1.0	57.4
Lack of proper training sharing the significance of the system with all employees to minimise resistance	1	1.0	1.0	58.4
Low down time easily manageable	1	1.0	1.0	59.4
Managerial	1	1.0	1.0	60.4
Managers approval stuff cooperation	1	1.0	1.0	61.4
Master date requirements have a large input as well as company with bag in	1	1.0	1.0	62.4
Minimum errors user resistance	1	1.0	1.0	63.4
Not sure as it was sort of new system only to ensure that training was given to relevant employees	1	1.0	1.0	64.4
On supply implementation was fine	1	1.0	1.0	65.3
Personnel current system functions satisfaction	1	1.0	1.0	66.3

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Poor planning poor management personnel	1	1.0	1.0	67.3
Poor results if not implemented correctly e.g. if employee does not pay attention to detailed when processing information it will provide poor output	1	1.0	1.0	68.3
Project management time line adherence IT system full support communication change management programmes.	1	1.0	1.0	69.3
Project planning and vision	1	1.0	1.0	70.3
Proper communication user resistance	1	1.0	1.0	71.3
Requisitions and payments are efficiently handled resources are well managed in the logistics and plant modules analyse are easy for reporting on financial performance and other functions	1	1.0	1.0	72.3
Resistance	1	1.0	1.0	73.3
Resistance from staff inability to manage the system	1	1.0	1.0	74.3
Resistant to change lack of training and change us really the big problem	1	1.0	1.0	75.2
Skill of the employees quality of the raw data variables of system accessibility of the system to all relevant employees coupled with intensive training	1	1.0	1.0	76.2
Skilled resources understanding scope	1	1.0	1.0	77.2
Skills it is knowledge that in an organisation	1	1.0	1.0	78.2
Staff eagerness	1	1.0	1.0	79.2
Support from top management project management communication training and education	1	1.0	1.0	80.2
Teething problems were challenges that were influenced by vendor identification and verification results were immediately available as it had to go through a process whereby confirmation of due processes.	1	1.0	1.0	81.2
The critical factors are time quality of training of users efficiency of the system buy in from employees users managing change financial backing and top management commitment	1	1.0	1.0	82.2
The data fed to the system it must be of high quality	1	1.0	1.0	83.2
The technical expertise were too far in Spain to be precise and the local team was not equipped to handle all the technical queries that came	1	1.0	1.0	84.2
There is aware clear understanding of the strategic more clear data accuracy excellent teamwork	1	1.0	1.0	85.1
They normally use MRP it is highly effective and easy to use	1	1.0	1.0	86.1
Time training cost	1	1.0	1.0	87.1

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Time training participation of employees	1	1.0	1.0	88.1
Top management support proper training	1	1.0	1.0	89.1
Training	2	2.0	2.0	91.1
Training and technical support	1	1.0	1.0	92.1
Training of personnel sufficient technical expertise	1	1.0	1.0	93.1
Training technical support online systems	2	2.0	2.0	95.0
Understanding of the system and its benefits	1	1.0	1.0	96.0
Vision and planning of the project choice of an ERP project	1	1.0	1.0	97.0
When the people don't work together in different departments will work out anything without discussing the changes with each other	1	1.0	1.0	98.0
While the software alone is a major investment the implementation process cost nearly four times as much the company had to take into account the cost of manpower and time necessary for a successful deploy	1	1.0	1.0	99.0
You need to have a clear project scope it is important to minimize or avoid customisation	1	1.0	1.0	100.0
Total	101	100.0	100.0	

The table below indicates feedback from respondents, on the managerial factors, which have affected the ERP system implementation

Table 8.87: Describe the managerial factors which have impacted on the ERP system implementation.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid .	30	29.7	29.7	29.7
A detailed budget outlining the money available to purchase and implement an ERP is necessary	1	1.0	1.0	30.7
Adhering to the users issues and implementing solution to the system by updating the system	1	1.0	1.0	31.7
Business sustainability	1	1.0	1.0	32.7
Capital it is amount of lessons that an organisation have	1	1.0	1.0	33.7
Commitment and support from project managers	1	1.0	1.0	34.7
Commitment by top management	1	1.0	1.0	35.6
Critical leadership and skill development for all new employees	1	1.0	1.0	36.6
Detailed as above	2	2.0	2.0	38.6
Determining risk through forecast remedial planning for gaps identified	1	1.0	1.0	39.6
Easy of access to management reports business continuity from centralized data perspective analyse are easy for reporting on financial performance and other functions	1	1.0	1.0	40.6
Factors are managing of change by management decision making and utilizing of output from ERP system	1	1.0	1.0	41.6
Good communication skills	1	1.0	1.0	42.6
I supply them with quick info included to carry out some tasks	1	1.0	1.0	43.6
I think there is still grey areas who is responsible for what a lot expected of which source of the systems specs are generic	1	1.0	1.0	44.6
I am not in the managerial position	1	1.0	1.0	45.5
Information is readily available and similarly integration wherein a single view is provided for finance HR and procurement processes.	1	1.0	1.0	46.5
Lack of feedback from managers do not encourage employees to be innovative	1	1.0	1.0	47.5
Lack of involvement	1	1.0	1.0	48.5
Lack of support	1	1.0	1.0	49.5
Lack of training	1	1.0	1.0	50.5
Leadership	1	1.0	1.0	51.5
Leadership communication authority	1	1.0	1.0	52.5

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Leadership project leaders supervisors	2	2.0	2.0	54.5
Management could influence understanding and importance of ERPs	1	1.0	1.0	55.4
Management has to sign off all good achieved to all good needed budget plan easier	1	1.0	1.0	56.4
Management were not regularly communicating to the employers during the transition phase the communication was often done on high level	1	1.0	1.0	57.4
Managers did not understand the system at first and it cause more confusion to employees	1	1.0	1.0	58.4
Managers have a huge role to play in cascading the projects objective	1	1.0	1.0	59.4
Monitoring has become the order of the day in as much as a lot of information is available to experience and even change the settings if there is any abnormal behaviour outside the parameters	1	1.0	1.0	60.4
N/A	2	2.0	2.0	62.4
N/A I was not employed by the company at that time	1	1.0	1.0	63.4
Not applicable as I am not in a managerial position	1	1.0	1.0	64.4
Not enough knowledge to commands further on this	1	1.0	1.0	65.3
Not sure	2	2.0	2.0	67.3
Organized punctual transparent communication	1	1.0	1.0	68.3
Poor communication from top management to employees resistance from old management not willing to accept new challenge	1	1.0	1.0	69.3
Poor knowledge and willingness to learn	1	1.0	1.0	70.3
Pre planning for their existing financial and operational performance planning setup and re-engineering system design configuration and testing installation and go live	1	1.0	1.0	71.3
Procedures SOP	1	1.0	1.0	72.3
Project champion	1	1.0	1.0	73.3
Project champion top management support	1	1.0	1.0	74.3
Regular audits required for the system to improve quality of system access to non-function employees e.g. project managers in order to improve efficiency	1	1.0	1.0	75.2
Senior managers could have been a bit rigid on the topic of the use of the system as a lot of times when the new	1	1.0	1.0	76.2

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system was not working staff members defaulted to the old system.				
Sponsorship and top management support	1	1.0	1.0	77.2
Supervision of processing and general use of system reporting on pros and cos of system to initiate the necessary updates and or changes	1	1.0	1.0	78.2
Support from the management by encouraging staff to use the system	1	1.0	1.0	79.2
Support to both facilities and trainers by providing confidence training rooms and allowing before to attend session	1	1.0	1.0	80.2
Support with the implementation process	1	1.0	1.0	81.2
Taking decision without looking at impacts that will factor the of paying invoices using the ax system	1	1.0	1.0	82.2
The approval of managers played a huge factor	1	1.0	1.0	83.2
The dedication and involvement of top management had a positive impact	1	1.0	1.0	84.2
The designed solution must be owned by the business identifying additional enhancement to improve solutions fit for the business embroiling change and best practise staff training	1	1.0	1.0	85.1
The system allows for early detection of any deviation on all processes and managers are given a chance to correct them gives managers a departmental overview and identifies KPIs	1	1.0	1.0	86.1
The system can drive inefficiency as users try to find ways to continue to complete their tasks while populating the system for the benefit of others	1	1.0	1.0	87.1
The top management did not allocate the proper budget for implementing ERP	1	1.0	1.0	88.1
There are none because the subordinates are the ones who feed the system and the subordinates are the ones who draw the report	1	1.0	1.0	89.1
There is a great level of commitment in top management there is work focused performance measures	1	1.0	1.0	90.1
There was a lack of a full buy in from out managers which portrait negatively to this lower level employees not committed to the activities around the implementation	1	1.0	1.0	91.1
There was a lack of coaching as well as a lack of delegation	1	1.0	1.0	92.1
Time factor and leadership	1	1.0	1.0	93.1

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Too much complexity was scoped into the system unwillingness to rethink the way the business processes work unrealistic expectations from the project team	1	1.0	1.0	94.1
Top management support	2	2.0	2.0	96.0
Top management support from project managers support from IT managers	1	1.0	1.0	97.0
Top managers and protect managers that manage the entire system	1	1.0	1.0	98.0
Training communication	1	1.0	1.0	99.0
Willingness to engage with the work force about the implementation	1	1.0	1.0	100.0
Total	101	100.0	100.0	



The table below indicate feedback from respondents, regarding the impact of the project plan and Vision on the ERP system implementation.

Table 8.88: Please describe the impact of the project plan and Vision on the ERP system implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	The project plan was well articulated and vision executed well resulting in project success	1	1.0	1.0	1.0
	.	38	37.6	37.6	38.6
	Accuracy timeless effective communication	1	1.0	1.0	39.6
	Being organized increases efficiency people lose time when they are not communicated well	1	1.0	1.0	40.6
	Costs reduction on head counts	1	1.0	1.0	41.6
	Gives direction and objectives gives timelines or guidance of timelines for the project	1	1.0	1.0	42.6
	Inaccurate timeliness	1	1.0	1.0	43.6
	Impact reduces work redundancy duplication of work	1	1.0	1.0	44.6
	It assist in ensuring that the project B implemented in accordance to its required timelines	1	1.0	1.0	45.5
	It guides and connect streamlined activities in accordance to timeline	1	1.0	1.0	46.5
	It has been good	1	1.0	1.0	47.5
	It has improved daily running of the company	1	1.0	1.0	48.5
	It helped set the process of ERP implementation easy to tackle and brought it to success	1	1.0	1.0	49.5
	It led to a successfully managed and delivered implementation of ERP in the company	1	1.0	1.0	50.5
	It might fail	1	1.0	1.0	51.5
	It provided direction keep the implementation on works	1	1.0	1.0	52.5
	It provided direction kept the implementation on track	1	1.0	1.0	53.5
	Lack of good planning might jeopardize project implementation	1	1.0	1.0	54.5
	Leadership structure and communication	1	1.0	1.0	55.4
	N/A	5	5.0	5.0	60.4
N/A I was not employed by the company at that time	1	1.0	1.0	61.4	
No project plan implemented	1	1.0	1.0	62.4	
None	1	1.0	1.0	63.4	
Not applicable	1	1.0	1.0	64.4	
Not enough knowledge	1	1.0	1.0	65.3	

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Positive impact	1	1.0	1.0	66.3
Project managers don't have access hence the project plans and networks cannot be executed on system	1	1.0	1.0	67.3
Project plan and vision was communicated to workers however the implementation itself was challenging	2	2.0	2.0	69.3
Project plan is key to a successful enterprise software a qualified project manager is rule number one for a successful implementation	1	1.0	1.0	70.3
Project plan was meant to last for 2months to get employees to understand the new system but it took longer than that	1	1.0	1.0	71.3
Project time lines here not met in most cases as the system was too complex with little buy in from key users of the system	1	1.0	1.0	72.3
Proper planning prevents poor performance	1	1.0	1.0	73.3
Standardization and cost reduction of the business process and costs	1	1.0	1.0	74.3
The degree of the project plan was assessed and structured in terms of 5 modules that are mainly required to produce a computer based information system for example hardware software people data and procedure.	1	1.0	1.0	75.2
The ERP gives like a bird view of all the stake holders available for the project	1	1.0	1.0	76.2
The impact of the SAP system it has improved our company performance and help us to generates profit due to increase on our sales revenue it have help us to executes our project plan successfully it have	1	1.0	1.0	77.2
The impact placed pressure or the operational managers in the sense that it required large amounts of their time while they still had to focus on the day to day operations of the business they do	1	1.0	1.0	78.2
The impact was such that it became easy to implement the project bearing in mind that every employee support the implementation of ERP	1	1.0	1.0	79.2
The implementation of ERP system produced a positive impact on aligning the goals of the company	1	1.0	1.0	80.2
The objective of implementation must be realized so the system enables us to work smart	1	1.0	1.0	81.2

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The plan was there it was just not shared critically with the rest of the staff when the system was going live what it would impact and how to be proactive with the customers	1	1.0	1.0	82.2
The project aims to ensure that the company complies with PFMA and taxation as a whole	1	1.0	1.0	83.2
The project plan and vision on the ERP system implementation was not planned to fit the movement of activities	1	1.0	1.0	84.2
The project plan and vision were able to chart a course of how the system will assist and what impact will it have on the company going forward	1	1.0	1.0	85.1
The project plan has resulted in actual steps taken to make it reality the vision is to see this as an automated service which would also alert security establishments to the risks out there on the roads it.	1	1.0	1.0	86.1
The project plan is crucial and its understanding is equally important the project plan drives costs and the control of resources	1	1.0	1.0	87.1
The project was planned around trial and error with very little vision leading to a delay in implementation	1	1.0	1.0	88.1
The project was planned well and the vision to implement was kept on track	1	1.0	1.0	89.1
The project will be implemented successfully and effectively	1	1.0	1.0	90.1
The successful implementation has seen a spike on revenue and less human innervations on system	1	1.0	1.0	91.1
The vision of the ERP is to minimize cost and increase the productivity of the firm	1	1.0	1.0	92.1
The vision was to have an internal system not the outsourced one	1	1.0	1.0	93.1
There is flexible reporting it provides the right tools for project manages	1	1.0	1.0	94.1
There was project plan or vision	1	1.0	1.0	95.0
There were slight delays on implementation due to some resistance initially there was also coaching and extensive training required the project was eventually concluded	1	1.0	1.0	96.0
This is not correctly scoped and designed this could results in scope creep and unforeseen unplanned additional budgetary resources to be allocated as well as inability to complete the product in time	1	1.0	1.0	97.0

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To improve the structure of the organisation	1	1.0	1.0	98.0
Vision was not really showed which place team in a robotic state a lot of pressure to get started which was an operational and cultural shock	1	1.0	1.0	99.0
You need making	1	1.0	1.0	100.0
Total	101	100.0	100.0	



The table 8.89 below indicate feedback from respondents, regarding the use of the ERP system in the company.

Table 8.89: Please describe your company use of the ERP system

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid .	27	26.7	26.7	26.7
Business intelligence billing Human Resources	1	1.0	1.0	27.7
Daily	14	13.9	13.9	41.6
Daily across 4 times zones	1	1.0	1.0	42.6
Daily basis with logistics finance supply chain and other functions	1	1.0	1.0	43.6
Daily by only a fraction of the total personnel	1	1.0	1.0	44.6
Daily for all planning scheduling and operation al executive activities	1	1.0	1.0	45.5
Daily quarterly and monthly report	1	1.0	1.0	46.5
Daily quarterly and monthly reports	1	1.0	1.0	47.5
Daily working hours	1	1.0	1.0	48.5
Day to day top management low management and all other employees	1	1.0	1.0	49.5
ERP is used for planning and controlling the resources	1	1.0	1.0	50.5
ERP is used on a regular basis as part of the system used to serve customers	1	1.0	1.0	51.5
ERP system is used of a daily basis	1	1.0	1.0	52.5
ERP system is used on daily basis most of manual process are not functional anymore	1	1.0	1.0	53.5
Everyday	6	5.9	5.9	59.4
Every day and every minute with more than 2500 users of the system	1	1.0	1.0	60.4
For sustainable development of the company	1	1.0	1.0	61.4
Frequent	1	1.0	1.0	62.4
Frequent use +50% different systems are integrated into the SAP ERP system HR finance planning etc.	1	1.0	1.0	63.4
Frequently everyday	3	3.0	3.0	66.3
Highly reliant on ERP systems daily use	1	1.0	1.0	67.3
I have no idea	1	1.0	1.0	68.3
In my department we would use the system daily to track vehicles	1	1.0	1.0	69.3
It is a daily thing to be used	1	1.0	1.0	70.3
It is used daily on capturing projects progress planning weekly occupations	1	1.0	1.0	71.3
It is used everyday	1	1.0	1.0	72.3

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It is used for maintenance resources planning in a full time basis	1	1.0	1.0	73.3
It is used in maintenance shutdown occurring every 3-6 months	1	1.0	1.0	74.3
It is used on daily basis	1	1.0	1.0	75.2
Location no of wagons on the train mass of product	1	1.0	1.0	76.2
Most of the time everyday	1	1.0	1.0	77.2
My company uses the ERP system on a 24/7 basis as it is critical to the business	1	1.0	1.0	78.2
N/A	1	1.0	1.0	79.2
Not often	1	1.0	1.0	80.2
Not sure	1	1.0	1.0	81.2
Not sure if there is an ERP program used	1	1.0	1.0	82.2
Now is the main system that is being used	1	1.0	1.0	83.2
On a daily basis	1	1.0	1.0	84.2
Raw materials and finished goods warehouse supply chain department maintenance engineering department	1	1.0	1.0	85.1
Slow and difficult	1	1.0	1.0	86.1
The company's use of ERP mainly involves checking inventory levels checking and movement to different storage locations creating purchase order requisitions running in transit stock reports creation shipmen	1	1.0	1.0	87.1
The ERP is used everyday	1	1.0	1.0	88.1
The ERP system is used daily and its live	1	1.0	1.0	89.1
The ERP system would predominantly be used for high level production planning and forecasting	1	1.0	1.0	90.1
The system is used daily by specialists between finance accounting Human Resources for personnel	1	1.0	1.0	91.1
The use of the ERP system is continuous i.e. every second of every hour of everyday 24/7 since several employees using the ERP system continuously on a daily basis it has become the life blood of our established.	1	1.0	1.0	92.1
There were no project planning so far	1	1.0	1.0	93.1
They use it every day to pay the invoices to different stakeholders	1	1.0	1.0	94.1
Very frequent but for basic usage mainly	1	1.0	1.0	95.0
Very frequently	1	1.0	1.0	96.0
We use the ERP system daily and use them for PO etc.	1	1.0	1.0	97.0

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We use the system on a daily basis this helps use to confirm stock available in the warehouse to customer as well as assisting them with placing orders and invoicing them out to customers	1	1.0	1.0	98.0
Yes it is frequent because there is a high work demand to procurement to perform daily tasks	1	1.0	1.0	99.0
Yes we use the Baan system daily	1	1.0	1.0	100.0
Total	101	100.0	100.0	



The table 8.90 below indicate feedback from respondents, with regard to what should be taken into consideration with to improve the user experience with the new ERP system.

Table 8.90: What should be taken into consideration with to improve the user experience with the new ERP system?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	31	30.7	30.7	30.7
.				
Alignment of data on different systems user manuals to ensure consistency across regions	1	1.0	1.0	31.7
Being strategic	1	1.0	1.0	32.7
By using all the features of the system and utilizing it to its optimum ability	1	1.0	1.0	33.7
Clear objectives clear plan adequate training	1	1.0	1.0	34.7
Communication clear and concise and with contest for the relative audience what affects the drawing user acceptance testing and in the solution off this way feel involved careful change man	1	1.0	1.0	35.6
Considering enough training	1	1.0	1.0	36.6
Continues training system guide budget	1	1.0	1.0	37.6
Continuous training system improvement regularly	1	1.0	1.0	38.6
Continuous training system guide booklet	1	1.0	1.0	39.6
Continuously training will be vital to ensure everyone is engaged	1	1.0	1.0	40.6
Dedication and commitment	1	1.0	1.0	41.6
Employees training and education of the system.	1	1.0	1.0	42.6
Engagement and interaction	1	1.0	1.0	43.6
Enough training	1	1.0	1.0	44.6
Future ERP systems must utilise artificial intelligence in order to allow minimal user input	1	1.0	1.0	45.5
I consider competitive and advantage and capabilities of the company involve everyone who will be using ERP	1	1.0	1.0	46.5
Improve quality of training the system is underutilized at the moment	1	1.0	1.0	47.5
Improve the interface so that it can be easy for employees.	1	1.0	1.0	48.5
In the same way that constant education delivers positive impacts on an ERP system an ability to encourage and delegate individual work throughout an implementation program produces equally valuable perform	1	1.0	1.0	49.5
Involvement from workers	1	1.0	1.0	50.5

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It is imperative that the user experience needs to be followed up daily hourly always as systems are being upgraded continuously the user needs to be exposed to these in order to gain experience and improve	1	1.0	1.0	51.5
It should address the needs of the organization and match their business model	1	1.0	1.0	52.5
It should be user friendly for everyone in the company or easily accessible	1	1.0	1.0	53.5
Language barrier	1	1.0	1.0	54.5
Language barrier on site level	1	1.0	1.0	55.4
Management should be more involved in offering more education and training	1	1.0	1.0	56.4
Monthly training for users	1	1.0	1.0	57.4
More effort in training the employees in the use of ERP system	1	1.0	1.0	58.4
More intense training and a more systematic approach to implementation	1	1.0	1.0	59.4
More training	1	1.0	1.0	60.4
More training and employee capacity is important	1	1.0	1.0	61.4
More training and enhancement on the SP HR module could assist the organization	1	1.0	1.0	62.4
More trainings and advanced one to fully operate the system	1	1.0	1.0	63.4
N/A	1	1.0	1.0	64.4
Not everyone is computer friendly	1	1.0	1.0	65.3
Ongoing training and refreshes training of users user's must continually be made aware of the benefits of the ERP system to the business as a whole and the critical part that they play in the process	1	1.0	1.0	66.3
Organizational management is managed through the process	1	1.0	1.0	67.3
Proper training	2	2.0	2.0	69.3
Quarterly training	1	1.0	1.0	70.3
Regular communicate to the users and understanding their day-to-day operation process give users customized training ensure there is active future strategic planning prior to system's capacity failure.	1	1.0	1.0	71.3
Reliability speed ease to use efficiency support enabler to business processes	1	1.0	1.0	72.3
Stall involvement should be initiated from the beginning so that there are no hiccups when implementing the system	1	1.0	1.0	73.3
Step by step guidance so user manuals should be given business users additionally a troubleshooting guide should be provided to assist end users	1	1.0	1.0	74.3

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Step by step guidance so user manuals should be given to business users additional a troubleshooting guide should provide to assist end users.	1	1.0	1.0	75.2
System should be user friendly	1	1.0	1.0	76.2
The age of being trained and their abilities to acquire knowledge on technology.	1	1.0	1.0	77.2
The feedback from customers would help in considering this factor	1	1.0	1.0	78.2
The integration of all functions data currently we have to go in each module to perform different functions.	1	1.0	1.0	79.2
The interface should be more user friendly have how to use videos and should not crash or go offline often	1	1.0	1.0	80.2
The system need to be more users friendly the system should be able to trouble shooting on its own the user need to be able to extract all needed data in graph forms.	1	1.0	1.0	81.2
The system should include search icon and be user friendly to navigate for information.	1	1.0	1.0	82.2
There must be individual empowerment share lessons learned whilst using ERP system.	1	1.0	1.0	83.2
Thorough training.	1	1.0	1.0	84.2
To have more informative material about ERP including workshops and working examples.	1	1.0	1.0	85.1
To work faster and accurate to produce quality.	1	1.0	1.0	86.1
Top management ERP system providers technology specialists and consultants.	1	1.0	1.0	87.1
Training	3	3.0	3.0	90.1
Training always works	1	1.0	1.0	91.1
Training and user requirements	1	1.0	1.0	92.1
Training intensive change management identifying and minimising waste through system elements.	1	1.0	1.0	93.1
Training is essential competence evaluation is required	1	1.0	1.0	94.1
Training is needed as the IT specialists keeps on updating the system.	1	1.0	1.0	95.0
Training knowledge	1	1.0	1.0	96.0
Training people knowing of the user of the system	1	1.0	1.0	97.0
Training to be provided monthly and spoken about with the super users to train other staff members	1	1.0	1.0	98.0
Understanding	1	1.0	1.0	99.0
User friendly easy data entry easy data access reducing complexes	1	1.0	1.0	100.0
Total	101	100.0	100.0	

8.10 Descriptive Analysis: Clothing and Textile Industries

8.10.1 Introduction

This section aims at analysing and discussing the research findings of clothing and textile industries. Three types of company size were targeted: Micro enterprise: 5 workers or less; Small enterprise: 6 – 49 workers; and Moderate enterprise: 50 – 200 workers. At least 18 respondents that were not familiar with enterprise resource planning system participated in the research survey of this study, which is divided into two sub-sections. The first section will discuss and analyse the results related to descriptive analysis, whilst the second section will focus on analysing the findings associated with open-ended discussion.

8.10.2 Descriptive Analysis: Biographic Information

In this section, background information of the participants that took part in this study with regard to: Age; highest qualification achieved; current position, years' experience in the sector; and Business type.



8.10.2.1 Respondents demographic per age group

The distribution of the sample in accordance with age group of respondents that participated in this study is presented in the Figure 8.26 below. It can be observed that 34.3% of respondents that took part in this study were in the age group of 20-29 years. Then, 38.9 % were between 30-39 year's old age groups; lastly, 27.8% of participants were in between 40-49 years old age.

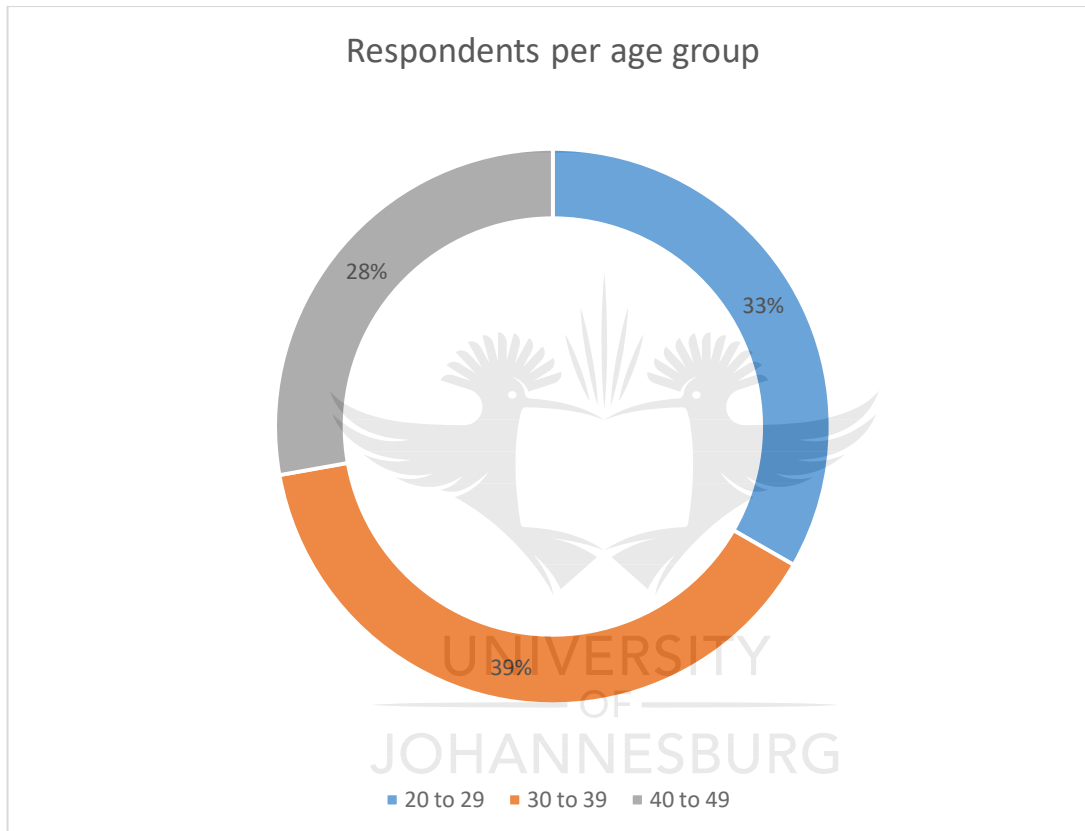


Figure 8.26: Respondents demographic per age group

8.10.2.2: Respondents demographic per highest qualification

Table 8.91: Respondents demographic per highest qualification achieved

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Matric	7	38.9	38.9	38.9
	Diploma	7	38.9	38.9	77.8
	Degree	4	22.2	22.2	100.0
	Total	18	100.0	100.0	

The distribution of the sample in accordance with respondents' highest qualification that participated in this study is presented in the Table 8.91. It can be seen that at least 38 % of respondents that took part in this study hold a Matric.38.9 % of participants possess a Diploma; and 22.2 % of respondents hold a Degree.



8.10.2.3 Respondents demographic per current position

The distribution of the sample in accordance with the current position of respondents that participated in this study is presented in Figure 8.27 below. It can be observed that 11.1% of respondents that took part in this study were Directors, while 11.1% were Managers. In addition, 16.7% of participants were supervisors; and 61.1 % were employees.

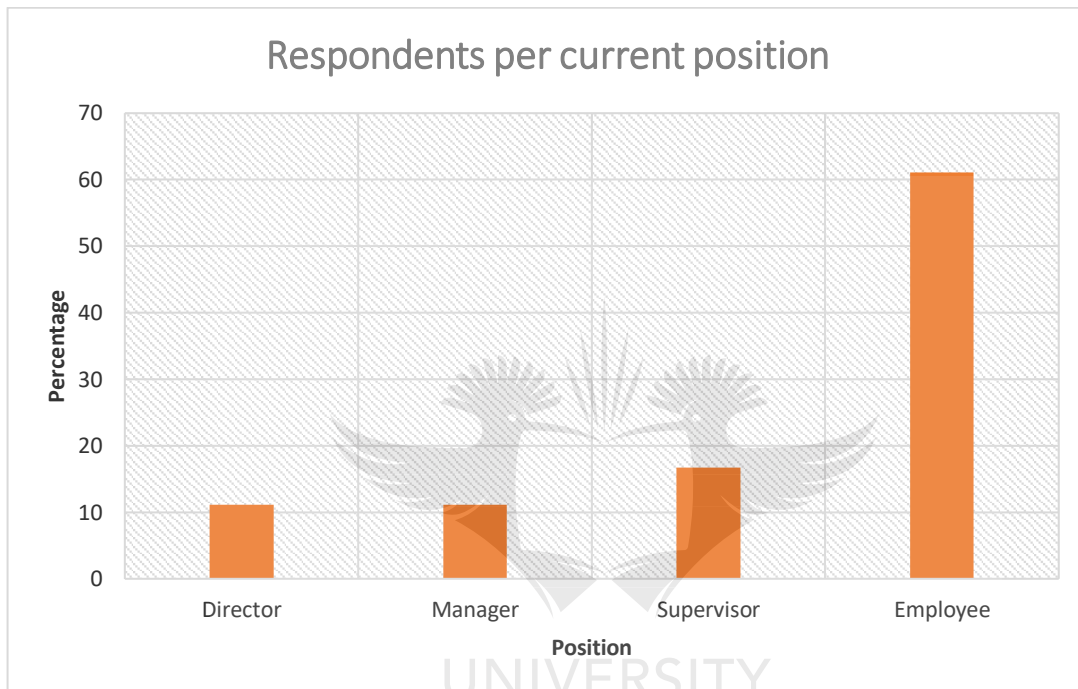


Figure 8.27: Respondents demographic per current position

8.10.2.4 Respondents per working experience

The distribution of the sample in accordance with respondents' per working experience that participated in this study is presented in the Figure 8.28 below. It can be seen that at least 55.6 % of respondents that took part in this study have 0 to 4 years' experience. Then, 33.3% of participants have 5 to 9 years, and 11.1 % of respondents have 10 to 14 years.

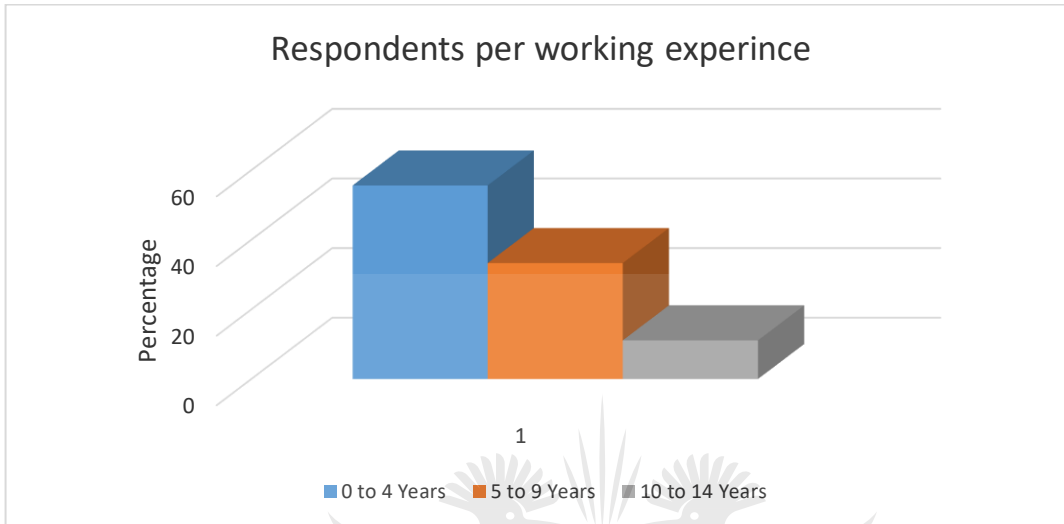


Figure 8.28: Respondents demographic per experience

8.10.2.5 Respondents per business type

The distribution of the sample in accordance with the business type of respondents that participated in this study is presented in the Figure 8.29 below. It can be observed that 5.6 % of respondents that took part in this study were from Micro enterprises. Further, 88.9 % were from Small enterprises; and 5.6 % of participants were from Medium enterprises.

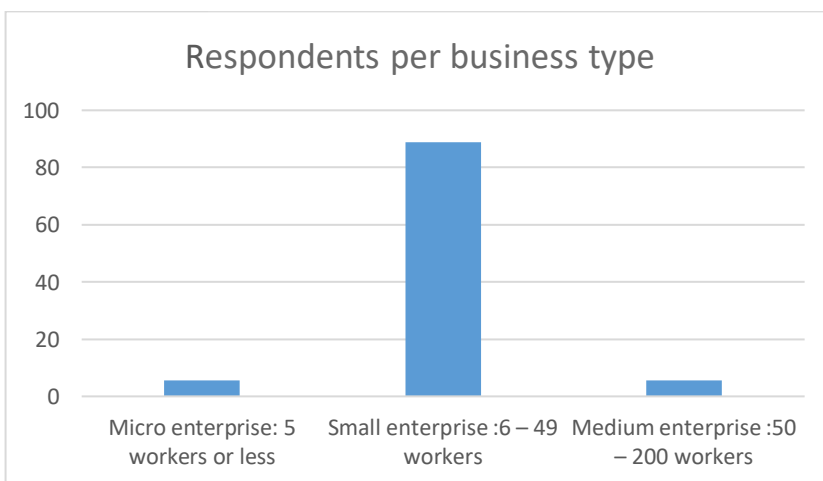


Figure 8.29: Respondents demographic per business type

8.11 Results from open ended responses

The Table 8.92 shows feedback from 18 respondents regarding, how the clothing and textile sector view Enterprise Resource Planning decisions in the different institutional and economic contexts within which they operate. The following feedback was provided:

Table 8.92: How the clothing and textile sector view Enterprise Resource Planning decisions in the different institutional and economic contexts within which they operate.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A company that has implemented ERP has the best information technology according to my view penetration is low in this industry and technology obsolesce is one of the major things faced by the clothing and	1	5.6	5.6	5.6
	Based on the rumours of ERP it can improve business	1	5.6	5.6	11.1
	Based on the information from other companies it will improve business	1	5.6	5.6	16.7
	Business improvement	1	5.6	5.6	22.2
	Don't know	1	5.6	5.6	27.8
	Heard and study about ERP at the college but business not using it	1	5.6	5.6	33.3
	I don't understand the question and I have a little knowledge of enterprise resource planning	1	5.6	5.6	38.9
	I have not fully understood this section so I don't think I can say my opinion yet	1	5.6	5.6	44.4
	I have not thoroughly thought about this	1	5.6	5.6	50.0
	I read about Enterprise Resource Planning it might be good for my business	1	5.6	5.6	55.6
	I really have no clue	1	5.6	5.6	61.1
	It might be good for our business	1	5.6	5.6	66.7
	N/A	1	5.6	5.6	72.2
	Never heard of Enterprise Resource Planning	1	5.6	5.6	77.8
	Not sure but I think the planning can improve the process	2	11.1	11.1	88.9
	They have notice a lot of positive change even in the quality of the products that they produce	1	5.6	5.6	94.4
	To tell the truth ERP has not been introduced to me in this organisation maybe because I have just started	1	5.6	5.6	100.0
	Total	18	100.0	100.0	

The Table 8.93 below identifies feedback from 18 respondents regarding the Viewpoint of how investors in the Clothing and Textile sector view the need for ERP implementation. The following feedback was provided:

Table 8.93: Viewpoint of how investors in the Clothing and Textile sector view the need for ERP implementation

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
A the company grow the processes become more complex and the need for data entry increases so an ERP system will help to make them keep track of all functional departments and they are ensured things are done.	1	5.6	5.6	5.6
An ERP system I believe will give a good insight for the investors that we are ready for our business to grow and even when it is complex, we have a system to make us work more efficiently and effectively.	1	5.6	5.6	11.1
As an investor I would love to view a true picture of what is happening in an organisation an ERP gives the platform of that to happen	1	5.6	5.6	16.7
Based on the information I got it feel like investors if there any would like it because it is a software that helps to outline things well in an organisation	1	5.6	5.6	22.2
Bring money into business	1	5.6	5.6	27.8
ERP can be a higher return on investment as it result in cost saving and higher co-ordinated services	1	5.6	5.6	33.3
ERP implementation systems are flexibility product they can focus on all aspects of the design because of the flexibility of the system.	1	5.6	5.6	38.9
ERP reduces idle time in the manner of combining different department's data and making it interlink this means increase in market share and return on investments.	1	5.6	5.6	44.4
Increase profit	1	5.6	5.6	50.0
Investors can invest on our business give us necessary training and we can use it.	1	5.6	5.6	55.6
Investors can rely on the ERP as the business might grow	1	5.6	5.6	61.1
Investors can reply on the ERP as the business might grow	1	5.6	5.6	66.7
It might be good to invest on but not sure how it works.	1	5.6	5.6	72.2

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It might be very useful and important to invest.	1	5.6	5.6	77.8
That can be a need to invest	1	5.6	5.6	83.3
There is a need to increase productivity	1	5.6	5.6	88.9
There is a need to invest because it reduce costs	1	5.6	5.6	94.4
They should research and invest more	1	5.6	5.6	100.0
Total	18	100.0	100.0	



Table 8.94 below identified feedback from 18 respondents regarding, Challenges of implementing an ERP in SME's, mainly in Clothing and Textile business. The following feedback was provided:

Table 8.94: Challenges of implementing an ERP in SME's, mainly in Clothing and Textile business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Budgeting may be an issue because all this data collection and putting it in one place is costly especially at a new company	1	5.6	5.6	5.6
	Commitment from managers and this can also result in insufficient budgeting for the project team members and for system training	1	5.6	5.6	11.1
	Do not have challenge because we are not using the system	1	5.6	5.6	16.7
	Don't know because I never used it	1	5.6	5.6	22.2
	For me this will be finding the perfect system program to work with and also system training for operators without wasting our production time and not wasting money as an organisation because honestly for	1	5.6	5.6	27.8
	It might fail if they don't understand it and don't know how to use it	1	5.6	5.6	33.3
	Lack of budgeting smooth running in an organisation is not really there because we are still finding our feet it will be really hard to adhere to standards of ERP when the workers do not even adhere to the	1	5.6	5.6	38.9
	Not sure	1	5.6	5.6	44.4
	Not sure because we never used it	1	5.6	5.6	50.0
	Not understanding the ERP might be a biggest challenge	1	5.6	5.6	55.6
	Not using the system but I think people must understand it	1	5.6	5.6	61.1
	Not using the system yet I am not sure of any challenges	1	5.6	5.6	66.7
	The challenge is that we don't know the ERP	1	5.6	5.6	72.2
	The first challenge will be resources and money to institute training to us operators	1	5.6	5.6	77.8
	The sector is still new therefore implementation of ERP required that training is required so that the worker understands the business implications and requirements	1	5.6	5.6	83.3
	To improve the firm performance through redesigned business process is a challenge in a SMEs and Micro medium business because a lot of things standard have not been met already lack of finance to train.	1	5.6	5.6	88.9
	We are not using ERP we do not know the challenges	1	5.6	5.6	94.4
	We don't have challenges because we are not using the system	1	5.6	5.6	100.0
	Total	18	100.0	100.0	

Table 8.95 identifies feedback from 18 respondents regarding Details of the incentives for implementing an ERP system in SME's, mainly in clothing and textile business. The following feedback was provided:

Table 8.95: Details of the incentives for implementing an ERP system in SME's, mainly in clothing and textile business

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5.6	5.6	5.6
Extra time wages like giving people money based on how productive they were in a week	1	5.6	5.6	11.1
Generate income and employ more workers	1	5.6	5.6	16.7
Implementation of an ERP system improves the overall business development activity in the long and short term processes are now faster because they are placed together in clearer formats company annual prof	1	5.6	5.6	22.2
Improve customers' needs and reduce cost	1	5.6	5.6	27.8
Improve sales	1	5.6	5.6	33.3
In the implementation of an ERP system to be productive and reaching end goals the motivation is that employees must finish their designated tasks and they leave after that as long as they conformed	1	5.6	5.6	38.9
Increase profit	1	5.6	5.6	44.4
It improves the whole business process	2	11.1	11.1	55.6
Job creation	1	5.6	5.6	61.1
N/A	1	5.6	5.6	66.7
Non-financial incentive such as employee engagement this wisdom would ensure operators to adapt to the system and that they are fully engaged in the learning process this would help them to be cross function	1	5.6	5.6	72.2
Non-financial incentives like recognition and attention from company leadership would help produce more quality engagements financial incentives like wages and increase sharing company annual profit	1	5.6	5.6	77.8
Not sure	1	5.6	5.6	83.3
Not sure but interested	1	5.6	5.6	88.9
Paying based on how productive we were in a week producing quality work	1	5.6	5.6	94.4
Wages and recognition from the manages	1	5.6	5.6	100.0
Total	18	100.0	100.0	

Table 8.96 below identifies feedback from 18 respondents regarding how respondents think the implementation of ERP will improve the Clothing and Textile Sector. The following feedback was provided:

Table 8.96: How respondents think the implementation of ERP will improve the Clothing and Textile Sector

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5.6	5.6	5.6
Based on my own understanding an ERP program would really help us on being efficient as the system will make it easier to collect data in all functional departments this will also help to keep track of the	1	5.6	5.6	11.1
Cost reduction	1	5.6	5.6	16.7
Customer service is improved because client information is streamlined and generalized therefore it is now easy to build customer relationship	1	5.6	5.6	22.2
I do not have to wait for the operators to report work in our different departments rather everything will be in one system and this means we will be more productive and more efficient	1	5.6	5.6	27.8
Improve of products and delivery time	1	5.6	5.6	33.3
Increase productivity	3	16.7	16.7	50.0
It can save time cost and improve productivity	1	5.6	5.6	55.6
It will help us to keep on track of the organisation as a whole in all functional areas this will help me with better planning and cost savings in the near future I believe	1	5.6	5.6	61.1
It will improve planning in this factory which will also help us as a firm to be productive	1	5.6	5.6	66.7
Job creation and cost reduction	1	5.6	5.6	72.2
Productivity	1	5.6	5.6	77.8
Productivity will increase because there will be the chances of repeating processes is decreased or eliminated	1	5.6	5.6	83.3
Reduce cost but not sure because I am not using it	1	5.6	5.6	88.9
Reporting is improved that means the organization will easily respond to complicated data requests employment potential will be at a low capital cost	1	5.6	5.6	94.4
We might benefit in training and using ERP in our company	1	5.6	5.6	100.0
Total	18	100.0	100.0	

8.12 Conclusion

Based on data collection and the results from ERP users, it seems the implementation of the system is very useful, and there is an improvement in most companies after the implementation of the system. The results from gap analysis proved that implementing ERP can lead to better results.

The majority of the respondents indicated that ERP can assist with administrative work and minimise human error. All information is compiled, stored and merged into the ERP in one single system instead of being fragmented throughout the entire organization. The data remains safe, accurate, complete, and ready to share; any business today is only as efficient as the software backbone that connects and supports its various functions from behind the scene to the more visible client activities. ERP is a flexible system, which will yield positive results; for example, it assists with communication skills between suppliers and manufacturers; it helps with cost reduction; and it improves productivity.

From the clothing and textile industries, most respondents are not aware, and they don't know what ERP is all about, but given some information, they believe that there is need to implement the system. Some of the respondents believe that a company that has implemented ERP has the best information technology, and in their industry and technology, obsolescence is one of the major challenges faced by the industry. Based on the rumours of ERP they believe it can improve business. They are not sure but think the planning can improve the process. ERP has not been introduced in their organisation maybe. As the company grows, the processes become more complex and the need for data entry increases. An ERP system will help keep track of all functional departments and they are assured things are done.

An ERP system will provide a good insight for the investors that are ready for their business to grow and especially when it is complex, we have a system to make work more efficiently and effectively. ERP can yield a higher return on investment as it results in cost saving and greater co-ordinated services. Without commitment from managers may also result in insufficient budgeting for the project team members and for system training. Budgeting may be an issue. To improve the firm's performance through a redesigned business process is a challenge in a SMEs and Micro businesses because standard things may not happens because of a lack of finance to train. Based on their understanding an ERP program would really help their companies be efficient, as the system will make it easier to collect data in all functional departments.

CHAPTER 9: ERP FRAMEWORK DEVELOPMENT

9.1 Introduction

Chapter 9 will focus on the development of ERP framework, and critical success factors that should be used in clothing and textile industries, to integrate the success of an ERP system. For an actual ERP implementation, the appropriateness of an application is a necessity. According to Aberdeen (2006) the cost of ERP applications has been reduced, and the applications are now affordable for SMEs to buy and implement. The implementation of ERP in SMEs could learn from larger companies about the advantages.

The researcher developed an integrated frames work for ERP that will assist in SME's in South Africa. The framework will be useful for employees who does not have ERP knowledge. It will also play a big role by giving companies an opportunity to implement the system. However, other authors like: Yang et al (2010) developed a model in figure 2.4, with the purpose of testing a model of relationship amongst the benefits to impact in supply chain management competencies, and Taiwanese IT industries of their adoption of ERP system; Fahad (2014) figure 2.5 also developed a model to investigate ERP implementation issues in relation to their applicability in Mid-size; and Ramdass (2007) developed a framework for clothing and textile industries. All these frameworks did not cover ERP in South African Clothing and textile industries (SME's) with nine critical success factors covered on the framework below:

On the page below is a framework developed for choosing and implementing ERPs (Figure 9.1).

9.2 ERP FRAMEWORK

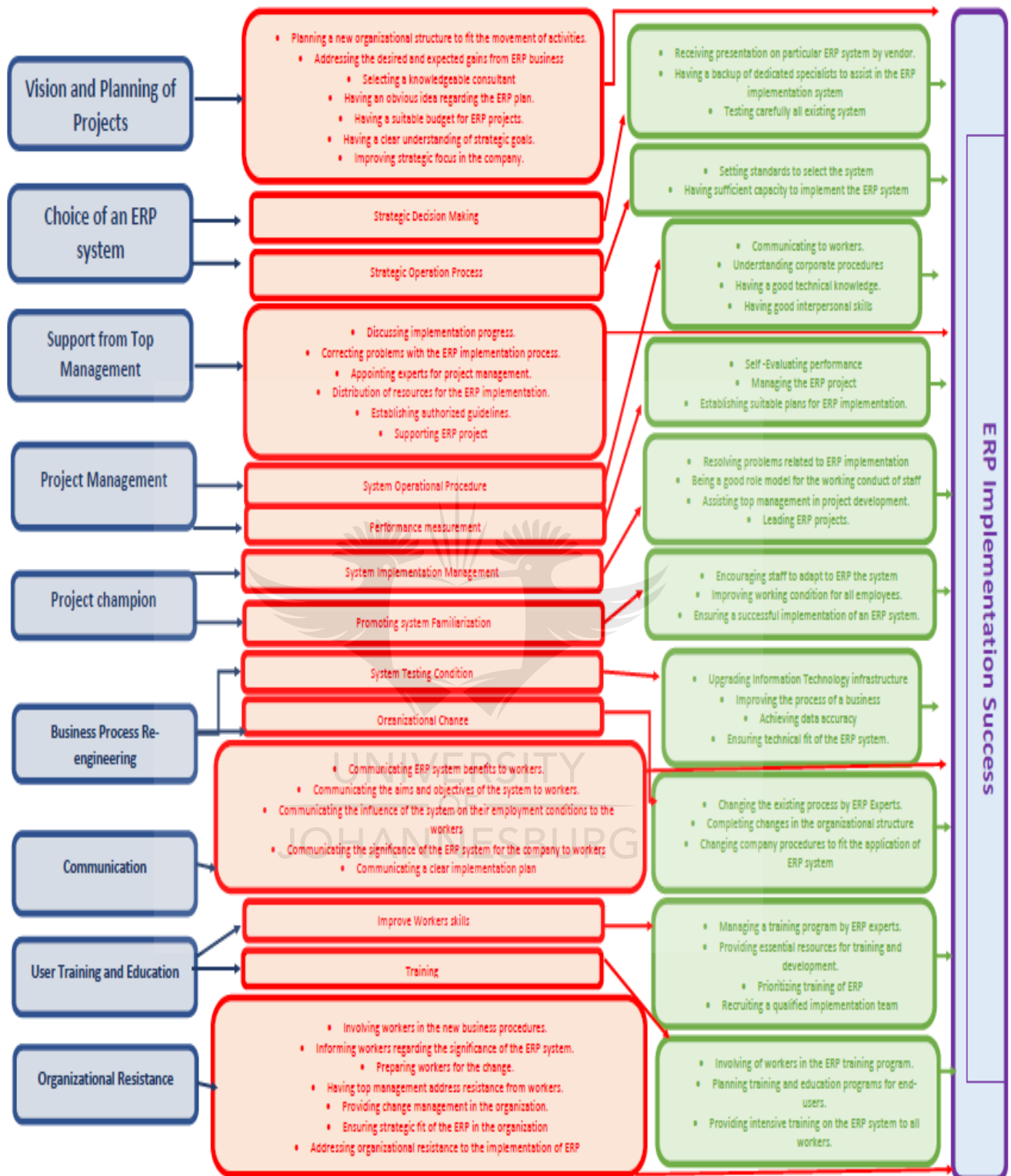


Figure 9.1: An integrated Enterprise Resource Planning framework for South African clothing and Textile industries (author's construction)

9.2.1 Vision and planning of Project.

It is important for an organization to concentrate on crucial needs, and its aims and objectives prior to ERP Implementation. Appropriate ERP implementation is very important, and it can only happen when there is strong vision and planning of the project in the company. A plan can also assist to manage, lead and control business's goals and objectives by showing risks, qualities, and all costs involved and available resources. (Kronbichler *et al.*, 2009). For a successful ERP implementation, vision and planning should be used together with the following variables:

- Planning a new organizational structure to fit the movement of activities.
- Addressing the desired and expected gains from ERP business.
- Selecting a knowledgeable consultant.
- Having an obvious idea regarding the ERP plan.
- Having a suitable budget for ERP projects.
- Having a clear understanding of strategic goals.
- Improving strategic focus in the company.

9.2.2 Choice of an ERP system

According to Almuharfi (2014), it is very important that a choice of an ERP System should correspond with the company. In order to decide on the suitable and appropriate ERP system, the company should be able to understand and evaluate different types of ERP systems that other organizations are implementing. The company must consider its own budget, time frame, and business procedures in order to fit in the perfect ERP system package. The following sub factors and variables should also be considered for a successful implementation:

Strategic decision-making

- Setting standards to select the system.
- Having sufficient capacity to implement the ERP system.
- Testing carefully all existing system.

Strategic operational process.

- Having a backup of dedicated specialists to assist in the ERP implementation system.
- Receiving presentation on particular ERP system by vendor.

To deliver a standard on which ERP package best matches their process, a company must also be able to focus on positive business procedure and requirements by the use of a gap analysis to find the differences that the ERP system can offer them ,

9.2.3 Support from Top Management

Support from Top Management allows a company to successfully implement an ERP system. According to Basu and Lederer (2011), once top management delegates the process of an ERP implementation to subordinate levels of management, there is not much commitment to implementing the ERP system successfully. If there is enough support from top management the success of ERP system implementation is likely. The following variables should also be considered for a success of an ERP implementation:

- Distribution of resources for the ERP implementation.
- Correcting problems with the ERP implementation process.
- Establishing authorized guidelines.
- Supporting ERP project.
- Appointing experts for project management.
- Discussing implementation Progress.

9.2.4 Project Management

The success of an ERP implementation requires the company involved in excellent project management. This comprises a strong and clear definition of objectives, the development of both a work plan and a resources plan, and a careful following of project development. The following sub factors and variables should be considered under project management, for the success of an ERP Implementation.

System operational procedure

- Understanding corporate procedures.
- Having a good technical knowledge.
- Communicating to workers.
- Having good interpersonal skills.

Performance measurement:

- Managing the ERP project.
- Self-evaluating performance.
- Establishing suitable plans for ERP implementation.

If a company manages their ERP project very well, their implementation of ERP will be successful. O'Connor (2012) explains that for a company to satisfy the requirements of different functional areas in the group, it is important to have a good approach. It is also possible for a company to plan, lead, control, and supervise functions, which are linked to ERP implementation, if there is good project management.

9.2.5 Project Champion

A good project team is required for proper scheduling and planning of the project. A team must have good knowledge and understanding to business and ERP system. Business must put in place a strong implementation team, who are well trained and training must be tailor made. It is vital for a business to use the ERP team as first line support to train all users, and also make sure that the software is up to date. There must also be a project plan that for monitoring and managing the project (Mushavhanamadi, 2013). The following sub- factors and variables for project champion factors should be considered for a success of an ERP System:

System implementation management:

- Assisting top management in project development.
- Being a good role model for the working conduct of staff.
- Leading ERP projects.
- Resolving problems related to ERP implementation.
- Promoting system familiarisation.
- Improving working condition for all employees.
- Ensuring a successful implementation of an ERP system
- Encouraging staff to adapt to ERP.

9.2.6 Business Process Re-engineering

Business process re-engineering (BPR) is one of the critical success factors for the success of an ERP implementation. It is the main complete redesign of an organization's procedures to attain substantial development on concurrent measurements of performance, e.g. company's cost, service and quality (Abdelrazek, 2015). Companies must have the capability of fitting the system by distinguishing their business from other ERP users, as this will help to reduce customization activities. The reality will require an investigation of business procedures, and it is one of the CSF and useful results of ERP implementation. There is no ERP solution that can be established to be a panacea for every business requirement. Thus, companies continuously face the difficulties of integrating different ERP system packages from various vendors and request business process re-engineering of a good standard. BPR should consider the following sub factors and variables:

System testing condition:

- Achieving data accuracy.
- Improving the process of a business.
- Ensuring technical fit of the ERP system.
- Upgrading Information Technology infrastructure.

Organisational change:

- Completing changes in the organizational structure.
- Changing the existing process by ERP Experts.
- Changing company procedures to fit the application of ERP system.

9.2.7 Communication

According to Chen *et al* (2008), a lack of proper communication can cause an ERP System to fail. That is why there is no doubt that when company has communication amongst its stakeholders; the success of the ERP system implementation is more likely. Data sharing and information regarding the project development and planning gives specific control to the ERP users, which yields improved results. The following Communication variables are very useful:

- Communicating the influence of the system on their employment conditions to the workers.
- Communicating the aims and objectives of the system to workers.
- Communicating ERP system benefits to workers.
- Communicating the significance of the ERP system for the company to workers.
- Sharing information related to ERP with stakeholders.
- Communicating a clear implementation

9.2.8 User Training and Education

User training is vital for complex systems such as ERP, particularly with largescale changes in job skills, and contents. It is important that all users have required skills and capabilities when running the ERP system. Users must also be conscious of ERP concepts, and features (Alsabaawi, 2015). The applicable aspects of training content are divided into features of the ERP system software, logic and concepts of ERP, and training. The following sub-factors and variables should also be considered:

Improve worker's skills:

- Providing essential resources for training and development.
- Prioritizing training on ERP.
- Recruiting a qualified implementation team.
- Managing a training programme led by ERP experts.

Training:

- Planning training and education programs for end-users.
- Involving of workers in the ERP training programme.
- Providing intensive training on the ERP system to all workers.

9.2.9 Organizational Resistance

ERP systems generally involve large-scale changes that might cause resistance, which might turn decrease, the predicted benefits of the system. Seven variables for organizational resistance that should be considered for ERP implementation success are:

- Addressing organizational resistance to the implementation of ERP.
- Providing change management in the organization.
- Involving workers in the new business procedures.
- Informing workers regarding the significance of the ERP system.
- Ensuring strategic fit of the ERP in the organization.
- Preparing workers for the change.
- Having top management address resistance from workers.

9.3 Conclusion

This chapter discussed critical factors for success and developed a framework that SME's should adopt for successful ERP implementation. It is important to develop a framework that will assist in developing ERP adoption and implementation, in order to provide a basic method for SME's suitability to adopt ERP applications. The framework would be able to offer guidance and direction for cost-effective and productive ERP implementation in SME's, and provide an effective method during implementation stages while addressing the CSF related to each stage. The framework will be presented to different ERP specialists for their analysis and testing.



Chapter 10: RECOMMENDATIONS AND CONCLUSIONS

10.1 Introduction

As discussed in Chapter 1, the overall research goal of this study was to develop an integrated ERP framework for South African Clothing and Textile cooperatives. Research questions will assist in determining if there is a positive outcome of objectives. In order to achieve the research goal of this study as presented in the previous section, the following objectives were addressed:

- To develop a strategic framework to implement an ERP system successfully in South African Clothing and Textile cooperatives.
- To determine what drives companies in introducing ERP system into their companies.
- To examine the efficiency of the current ERP framework implemented by large manufacturing companies.
- To determine how several investors in C&T sector make sense of the need for ERP implementation.
- To determine how clothing and textile sector view Enterprise Resource Planning decisions in the different institutional and economic contexts within which they operate.
- To classify the drivers and barriers to implement a strategic framework for ERP in SMEs, mainly in C&T business.
- To examine previous ERP frameworks in the current literature review.
- To determine critical success factors linked to ERP system implementation

10.2 Conclusion on Research Questions

In order to achieve the different objectives, this study sought to answer to the following research questions.

10.2.1 How can a holistic Enterprise Resource Planning Framework can be developed for the Small and Medium South African Clothing and Textile Enterprise?

Chapter 9 developed and discussed ERP framework that may be used to integrate the success of an ERP system. For an actual ERP implementation, the appropriateness of an application is a necessity. The implementation of ERP in SMEs might be regarded cautiously from the viewpoint of applying the success factors previously recognised for larger companies to a different set of smaller entities.

10.2.2 What motivates business organisations to implement ERP into their business activities?

Table 10.1 below explains the most important details from ERP users on what has motivated their business organization to implement ERP. The majority of the respondents indicated that they are using ERP because of cost reduction, the improvement of productivity, and to improve business performance.

Table 10.1: Motivation for business organization to implement ERP into its business activities.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17	16.8	16.8	16.8
Administrative work and minimise human error	1	1.0	1.0	17.8
All information is compiled stored and merged into the ERP in one single system instead of being fragmented throughout the entire organization the data remains safe accurate complete and ready to share.	1	1.0	1.0	18.8
Any business today is only as efficient as the software backbone that connects and supports its various functions from behind the scene to the more visible client activities	1	1.0	1.0	19.8
Because ERP is a flexible system which will yield positive results	1	1.0	1.0	20.8
Because the ERP comes with multiple modules.	1	1.0	1.0	21.8
Better communication skills between suppliers and manufacturers.	1	1.0	1.0	22.8
Can't read.	1	1.0	1.0	23.8
Cost reduction reduce time and introduce new technology.	1	1.0	1.0	24.8
Cost reduction business process standardization	1	1.0	1.0	25.7
Cost savings process management and flow data recording for future reference	1	1.0	1.0	26.7
Customer fulfilment meet the demand improve productivity.	1	1.0	1.0	27.7
ERP was implemented as an easier user friendly system that would greatly enhance the company's abilities communicate with our vendors IRO loading them onto the system and ensuring payments are linked to their business.	1	1.0	1.0	28.7
For cost savings purpose	1	1.0	1.0	29.7
For growth and improvement	1	1.0	1.0	30.7
For optimization and standardization.	1	1.0	1.0	31.7
For sustainability purposes	1	1.0	1.0	32.7
Global standard	1	1.0	1.0	33.7
Global system that had to be implemented locally	1	1.0	1.0	34.7

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Help with resources planning and providence to be able to carry out all planned for a financial year.	1	1.0	1.0	35.6
I believe that motivated the business to implement ERP was to move into a paperless business that could reduce errors and also save the organisation money.	1	1.0	1.0	36.6
Improve business process	1	1.0	1.0	37.6
Improve efficiency and effectiveness	1	1.0	1.0	38.6
Improve productivity	1	1.0	1.0	39.6
Improved planning processes required as well as more accurate planning	1	1.0	1.0	40.6
Improves performance and produces accurate information results.	1	1.0	1.0	41.6
Improving customer service was the main reason of motivation of implementation of ERP.	1	1.0	1.0	42.6
In order to have a seamless more effective system for certain operations in the organisation.	1	1.0	1.0	43.6
In order to reduce waste and improve integration of systems in general.	1	1.0	1.0	44.6
Increase productivity and save costs.	1	1.0	1.0	45.5
Increase profit margins reduce work scope	1	1.0	1.0	46.5
Integrated systems.	1	1.0	1.0	47.5
It will simplify the process reduce errors and simplify the convert process.	1	1.0	1.0	48.5
Lack of data organization and accessibility as it becomes difficult to plan for new projects.	1	1.0	1.0	49.5
Make process better.	1	1.0	1.0	50.5
Management took the decision.	1	1.0	1.0	51.5
My organisation has implemented ERP because it will assist in easy management of the day to day procedure.	1	1.0	1.0	52.5
My organization used to use multiple standalone systems for payroll finance and procurement SAP provided these modules in one system.	1	1.0	1.0	53.5
Our business implemented sprint so that we can see the whereabouts of the train its location to trace the loads.	1	1.0	1.0	54.5
Process system improvement especially were efficiency is concerned.	1	1.0	1.0	55.4
Productivity improvement.	1	1.0	1.0	56.4
Reduce cost.	1	1.0	1.0	57.4
Reducing cost while improving productivity.	1	1.0	1.0	58.4
Resources allocation planning.	1	1.0	1.0	59.4
Save costs time process to be more efficient and effective	1	1.0	1.0	60.4
The advantages that brings of a business.	1	1.0	1.0	61.4
The benefits it posed for the organisation.	1	1.0	1.0	62.4

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The business recognised that orders to remain competitive in the market it unessential to implement an effective ERP system which provided relevant date and metrics.	1	1.0	1.0	63.4
The business was motivated to implement ERP system in order to improve efficiency reliability accuracy and quality of information relating to planning material requirements accuracy and speed.	1	1.0	1.0	64.4
The company was looking for a system that would save them money increase accuracy competitiveness and customer service and include flexibility	1	1.0	1.0	65.3
The need for integrated planning and management across business units thereby minimizing resource requirements.	1	1.0	1.0	66.3
The previous ERP system was not working to the best of benefit to the company.	1	1.0	1.0	67.3
The system was introduced to reduce time and cost.	1	1.0	1.0	68.3
The type of application and systems the form users.	1	1.0	1.0	69.3
They use ERP system to check the availability of books and shelves of books that are not occupied.	1	1.0	1.0	70.3
To achieve integrated business processes and systems.	1	1.0	1.0	71.3
To achieve integrated business processes systems.	1	1.0	1.0	72.3
To align with industry best practices and further efficiently manage SCM and logistics value chain processes.	1	1.0	1.0	73.3
To automate administrative work and minimise human error.	1	1.0	1.0	74.3
To be able to plan better improve service delivery and in turn gain market share.	1	1.0	1.0	75.2
To better manage inventory to prevent shrinkage to increase profit to have more efficiency in the operations.	1	1.0	1.0	76.2
To better manage inventory to prevent product shortages.	1	1.0	1.0	77.2
To change the organisational structure to fit the application of organisational functions.	1	1.0	1.0	78.2
To enhance control on costs by planning materials is production.	1	1.0	1.0	79.2
To ensure accuracy efficiency and reliability of business processes.	1	1.0	1.0	80.2
To ensure that business goals are managed and organized effectively.	1	1.0	1.0	81.2
To ensure that the correct resources are aligned in terms of the organisations requirements.	1	1.0	1.0	82.2
To get formerly and accurate information and develop a very good relationship with customer by satisfying them.	1	1.0	1.0	83.2

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To have history data of events to have coordination in terms of processes	1	1.0	1.0	84.2
To improve business performance.	1	1.0	1.0	85.1
To improve on our turnaround strategy by reducing time taken sourcing for goods or service e.g. from the end user placing requisition to the buyer receiving the requisition and action it by sourcing quotation	1	1.0	1.0	86.1
To improve the strategic focus of the company and employees.	1	1.0	1.0	87.1
To integrate and align business process for efficient delivery of company objectives for considerate business processing analytical and reporting purpose.	1	1.0	1.0	88.1
To integrate to the existing system and increase productivity.	1	1.0	1.0	89.1
To keep control over all goods received used and scrapped record of goods coming and going.	1	1.0	1.0	90.1
To mainly automate the manual process and improve daily activities just so the business becomes efficient and effective.	1	1.0	1.0	91.1
To make profit while reducing cost.	1	1.0	1.0	92.1
To make sure that productivity improves.	1	1.0	1.0	93.1
To save money and to plan without wastage.	1	1.0	1.0	94.1
To save money and to plan without wastage.	1	1.0	1.0	95.0
To standardize processes.	1	1.0	1.0	96.0
To streamline desperate systems and processes onto a common platform in order to maximize profits and minimise costs.	1	1.0	1.0	97.0
To sustain the business in a long term	1	1.0	1.0	98.0
Upgrading organizational system and the shift.	1	1.0	1.0	99.0
What motivated the organization to choose an ERP software was that information will be integrated easily accessible and it is more efficient?	1	1.0	1.0	100.0
Total	101	100.0	100.0	

10.2.3 How efficient is the current ERP framework implemented by large manufacturing companies?

Table 10.2 below explains the most important details from ERP users regarding the current ERP framework that is efficiently implemented by their companies. The majority of the respondents indicated that there is improvement with the ERP called SAP. SAP is user friendly. It is also very efficient, the results are 99% accurate, it's easy to work with, saves time, and you can design a report the way you want, as long as you have the consultant on site. Other respondents indicated that it is excellent, and the organization has reaped benefits to include integration and cost saving whilst achieving internal efficiencies.



Table 10.2: Efficiency of current ERP framework in large companies

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	31	30.7	30.7	30.7
.	1	1.0	1.0	31.7
Can't read	1	1.0	1.0	32.7
ERP effectively implemented to my organisation and there is improvement	1	1.0	1.0	33.7
ERP SAP is very efficient the results are 99% accurate and easy to work with and it save time you can design report the way you want as long as you have the consultant on site SAP is user friendly.	1	1.0	1.0	34.7
Has it been tested before to prove that it can be reliable	1	1.0	1.0	35.6
I agree	1	1.0	1.0	36.6
I agree with the stated as it has been able to cut costs and decrease waste	1	1.0	1.0	37.6
I would not be able to tell if is efficiently successful since I did not do training through ERP or with the system at all	1	1.0	1.0	38.6
I am not sure	1	1.0	1.0	39.6
In progress the efficiency is evaluated step by step through monthly reviews and feedback	1	1.0	1.0	40.6
It efficiently get controlled and summary	1	1.0	1.0	41.6
It has not been implemented fully many modules are still in the testing phase	1	1.0	1.0	42.6
It is a work in progress currently under implementation	1	1.0	1.0	43.6
It is currently fully functional	1	1.0	1.0	44.6
It is excellent and the organization has reaped benefits to include integration and cost saving whilst improving internal efficiencies	1	1.0	1.0	45.5
It is implemented and making perfectly	1	1.0	1.0	46.5
It is implemented and working perfectly	1	1.0	1.0	47.5
It is working in every way and has proved efficient to the business and has generate profits	1	1.0	1.0	48.5
Less work has been done to evaluate the quality of ERP in its operative	1	1.0	1.0	49.5
Monitoring and control is measured continuously and changes are revised as and when required	1	1.0	1.0	54.5
N/A	5	5.0	5.0	55.4
N/A I was not employed by the company at that time	1	1.0	1.0	56.4
Needs improvement	1	1.0	1.0	

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No because some of the employees were struggling with his new system	1	1.0	1.0	57.4
No because we are not using the system to its optimum efficiency and thus not getting values worth	1	1.0	1.0	58.4
No it is very outdated and does not include many departments of the company	1	1.0	1.0	59.4
No it was not there was many problems with the system not working	1	1.0	1.0	60.4
Not 100% efficiently more training needed	1	1.0	1.0	61.4
Not effectively my understandings is there is communication breakdown information is not well passed between head office and site	1	1.0	1.0	62.4
Not efficient	1	1.0	1.0	63.4
Not necessarily because other staff members were not even aware of the ERP	1	1.0	1.0	64.4
Not really we are still on a trial and error phase a lot still needs to be test documented and made official	1	1.0	1.0	65.3
Not sure	2	2.0	2.0	67.3
On a weekly basis we run MRP to plan the stock required by production the ERP system is live as well as issuing to production also there is daily control and maintaining of shop orders and purchase orders	1	1.0	1.0	68.3
Process procedures and good planning	1	1.0	1.0	69.3
SAP system was well implemented steps and procedures were followed	1	1.0	1.0	70.3
Slowly getting there	1	1.0	1.0	71.3
Some features such as stock allocation from external hired warehouses was left out this remained a manually duty since the ERP system was not linked	1	1.0	1.0	72.3
SYSPRO was well prepared and implemented to increase business strategy	1	1.0	1.0	73.3
System was running well	1	1.0	1.0	74.3
The ERP framework was not efficiently implemented as there were certain issues that arose in the process of implementation	1	1.0	1.0	75.2
The ERP system has increased our numbers and we are able to track back As to how we are doing financially as a company we are able to generate accurate information from the system as well as to customize it	1	1.0	1.0	76.2
The frame work seems to be fine also can unpack a lot of data and have it organized simply	1	1.0	1.0	77.2

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The frame work was implemented all at once instead of systematically	1	1.0	1.0	78.2
The implementation of the ERP was a wise decision as we now have integrated system that focus on data integrity and security there was a need to phase out the old system that could not communicate to each	1	1.0	1.0	79.2
The workers are efficiently involved the essential resources for training is prioritized better sharing of information	1	1.0	1.0	80.2
There is a lot of room for improvement there is also a gap for change management with employees and the system itself is not optimized in use	1	1.0	1.0	81.2
There is always room for improvement ERP systems have built in best practise and this should be more fully embraced by the business instead of conducting business as usual	1	1.0	1.0	82.2
There should be an improvement as the implementation was not 100% accurate	1	1.0	1.0	83.2
This statement is false	1	1.0	1.0	84.2
To the company's best needs i.e. ability to organise edit and share data across various departments	1	1.0	1.0	85.1
True employees are able to capture procurement requisitions monitor and approve procurements process payments and manage our logistics resources such as fleet on ERP systems	1	1.0	1.0	86.1
True more needs to be done to train employees using the system and awareness session needed for all employees affected by the adoption of the system	1	1.0	1.0	87.1
True the ERP meets the requirements of the overall organisational requirements as well as those of the users	1	1.0	1.0	88.1
User friendly	1	1.0	1.0	89.1
Very well	1	1.0	1.0	90.1
We are still resolving issues from legacy system almost 12 months later	2	2.0	2.0	92.1
Yes	1	1.0	1.0	93.1
Yes all process ae implemented and ensured that they spark to the framework all business units follow the new framework	1	1.0	1.0	94.1
Yes it is	1	1.0	1.0	95.0

Yes it is ERP is extremely helpful in the integration of our company data Human Resources logistics supply chain and finance functions there is a value in flow of processing information and analysing and re	1	1.0	1.0	96.0
Yes the company y explained and provided enough knowledge and information	1	1.0	1.0	97.0
Yes the company had moved mountains to ensure that this investment should meet and exceed its expectations by acceptance it put the company on par with other progressive corporations	1	1.0	1.0	98.0
Yes the project team was well organized and project progress was shared with the rest of the company	1	1.0	1.0	99.0
Yes they have an internal system called ax they used for paying their invoices	1	1.0	1.0	100.0
Total	101	100.0	100.0	

10.2.4 How do several investors in C&T sector make sense of the need for ERP implementation?

Table 10.3 below explains feedback from respondents regarding their ideas of how investors in the Clothing and Textile sector view the need for ERP implementation. For example, 5.6% supposed that an ERP system I believe will give a good insight for the investors that we are ready for our business to grow and even when it is complex we have a system to make us work more efficiently and effectively”.

Table 10.3: How investors in the Clothing and Textile sector view the need for ERP implementation.

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	As the company grow the processes become more complex and the need for data entry increases so an ERP system will help to make them keep track of all functional departments and they are ensured things are done.	1	5.6	5.6	5.6
	An ERP system I believe will give a good insight for the investors that we are ready for our business to grow and even when it is complex we have a system to make us work more efficiently and effectively.	1	5.6	5.6	11.1
	As an investor I would love to view a true picture of what is happening in an organisation an ERP gives the platform of that to happen	1	5.6	5.6	16.7
	Based on the information I got it feel like investors if there any would like it because it is a software that helps to outline things well in an organisation	1	5.6	5.6	22.2
	Bring money into business	1	5.6	5.6	27.8
	ERP can be a higher return on investment as it result in cost saving and higher co-ordinated services	1	5.6	5.6	33.3
	ERP implementation systems are flexibility product they can focus on all aspects of the design because of the flexibility of the system.	1	5.6	5.6	38.9
	ERP reduces idle time in the manner of combining different department's data and making it interlink this means increase in market share and return on investments.	1	5.6	5.6	44.4
	Increase profit	1	5.6	5.6	50.0
	Investors can invest on our business give us necessary training and we can use it.	1	5.6	5.6	55.6
	Investors can rely on the ERP as the business might grow	1	5.6	5.6	61.1
	Investors can reply on the ERP as the business might grow	1	5.6	5.6	66.7
	It might be good to invest on but not sure how it works.	1	5.6	5.6	72.2
	It might be very useful and important to invest.	1	5.6	5.6	77.8
	That can be a need to invest	1	5.6	5.6	83.3
	There is a need to increase productivity	1	5.6	5.6	88.9
	There is a need to invest because it reduce costs	1	5.6	5.6	94.4
	They should research and invest more	1	5.6	5.6	100.0
Total	18	100	100.0		

10.2.5 How does clothing and textile sector view Enterprise Resource Planning decisions to the different institutional and economic contexts within which they operate?

The table 10.4 below shows feedback from respondents regarding how the clothing and textile sector view Enterprise Resource Planning decisions in the different institutional and economic contexts within which they operate. The following feedback was provided:

Table 10.4: How the clothing and textile sector views ERP decisions

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
A company that has implemented ERP has the best information technology according to my view penetration is low in this industry and technology obsolesce is one of the major things faced by the clothing and	1	5.6	5.6	5.6
Based on the rumours of ERP it can improve business	1	5.6	5.6	11.1
Based on the information from other companies it will improve business	1	5.6	5.6	16.7
Business improvement	1	5.6	5.6	22.2
Don't know	1	5.6	5.6	27.8
Heard and study about ERP at the college but business not using it	1	5.6	5.6	33.3
I don't understand the question and I have a little knowledge of enterprise resource planning	1	5.6	5.6	38.9
I have not fully understood this section so I don't think I can say my opinion yet	1	5.6	5.6	44.4
I have not thoroughly thought about this	1	5.6	5.6	50.0
I read about Enterprise Resource Planning it might be good for my business	1	5.6	5.6	55.6
I really have no clue	1	5.6	5.6	61.1
It might be good for our business	1	5.6	5.6	66.7
N/A	1	5.6	5.6	72.2
Never heard of Enterprise Resource Planning	1	5.6	5.6	77.8
Not sure but I think the planning can improve the process	2	11.1	11.1	88.9
They have notice a lot of positive change even in the quality of the products that they produce	1	5.6	5.6	94.4
To tell the truth ERP has not been introduced to me in this organisation maybe because I have just started	1	5.6	5.6	100.0
Total	18	100.0	100.0	

10.2.6 What are the drivers and barriers to implement a strategic framework for ERP in SMEs, mainly in C&T business?

Table 10.5 below identified feedback from respondents regarding barriers of implementing an ERP in SME's, mainly in Clothing and Textile business. 5.6 % of the respondent believed that budgeting may be an issue, and another 5.6 % explained that (lack of) commitment from managers and this can also result in insufficient budgeting for the project team members and for system training.

Table 10.5: Barriers of implementing an ERP in SME's, mainly in Clothing and Textile business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Budgeting may be an issue because all this data collection and putting it in one place is costly especially at a new company	1	5.6	5.6	5.6
	Commitment from managers and this can also result in insufficient budgeting for the project team members and for system training	1	5.6	5.6	11.1
	Do not have challenge because we are not using the system	1	5.6	5.6	16.7
	Don't know because I never used it	1	5.6	5.6	22.2
	For me this will be finding the perfect system program to work with and also system training for operators without wasting our production time and not wasting money as an organisation because honestly for	1	5.6	5.6	27.8
	It might fail if they don't understand it and don't know how to use it	1	5.6	5.6	33.3
	Lack of budgeting smooth running in an organisation is not really there because we are still finding our feet it will be really hard to adhere to standards of ERP when the workers do not even adhere to the	1	5.6	5.6	38.9
	Not sure	1	5.6	5.6	44.4
	Not sure because we never used it	1	5.6	5.6	50.0
	Not understanding the ERP might be a biggest challenge	1	5.6	5.6	55.6
	Not using the system but I think people must understand it	1	5.6	5.6	61.1
	Not using the system yet I am not sure of any challenges	1	5.6	5.6	66.7
	The challenge is that we don't know the ERP	1	5.6	5.6	72.2
	The first challenge will be resources and money to institute training to us operators	1	5.6	5.6	77.8
	The sector is still new therefore implementation of ERP required that	1	5.6	5.6	83.3

training is required so that the worker understands the business implications and requirements				
To improve the firm performance through redesigned business process is a challenge in a SMEs and Micro medium business because a lot of things standard have not been met already lack of finance to train	1	5.6	5.6	88.9
We are not using ERP we do not know the challenges	1	5.6	5.6	94.4
We don't have challenges because we are not using the system	1	5.6	5.6	100.0
Total	18	100.0	100.0	

10.2.7 What are the flaws of previous ERP frameworks in the current literature review?

The risk involved in ERP implementation has led to the need for careful planning among businesses. Whereas higher prices of implementation can mean that typically large corporations take the fall. According to Dlodlo (2011) though, SMEs have to compete with these recent ERP methods regardless of their smaller budgets. Even though the risk involved can imply that fewer SMEs are taking part in the process of ERP and those who had implemented the planning process are not effectively using those models. Therefore there is a need to develop a cost effective framework for the implementation of an ERP which not only meets the necessities of SME, but also takes into consideration the dynamic environment that SMEs function in. Shah *et al* (2011) claim that ERP implementation normally require structural work processes to be changed to utilise the greatest business practices summarised in ERP systems for proper handling of the business procedures. Then it increases the work processes, and decrease costs of the industry.

ERP tasks are difficult goals which impact major internal and external processes of businesses. The achievement of the plan directly impacts the performance and the existence of the business. Today's businesses are facing globalization of markets and fast-moving economies. In order to manage these situations, the use of technology, as well as communication systems, is virtually obligatory. The implementation of ERP systems as consistent systems that incorporate the activities of the whole businesses has become a significant stimulus for today's companies.

10.3 Limitations of the study

This research recommends the development of an integrated Enterprise Resource Planning (ERP) framework for South African clothing and textile industries, mainly is Small Medium Enterprise (SME). The researcher can use additional measurements for companies' competencies from the consultant's businesses that will make the results to be more convincing. It appears that most of the ERP consultant's businesses did not save all their records.

Additionally, the research was conducted for more than three years, and the researcher is a full time Lecturer and part time D.Phil. student at the University of Johannesburg. It was very challenging to balance career and personal commitments, which led to delays and the restriction of data collection to Gauteng. However the researcher continued being reliable with the distribution of data collection and received positive feedback. Limitation of budget and time was also a challenge, because a researcher was using her personal budget and transport for data collection, and most of them were collected during working hours, between Mondays and Fridays. The whole process was completed in a short time.

10.4 Contributions of the study

To ensure that the model is realistic and practically usable by midsize business managers. Though the framework was based on ERP literature review, and results from ERP specialists, it will be tested in SME's companies for practical experiences, to make sure that it is realistic, and it can be used. Research questions and objectives for the study allowed the researcher to investigate reasons why SME's would show interest in ERP, though there is limited budget, resources and time. The framework will be very useful for SME's employees who does not have ERP knowledge or expertise. Due to lack of resources and information for ERP adoption in SME's, the framework will play a big role by giving them an opportunity to implement the system

10.5 Recommendation for future study

The researcher developed an Integrated Framework for ERP implementation that will assist in South Africa's SME's with ERP system implementation, and understanding its CSF. Additionally, while the sample for this study consisted of only Gauteng companies, it might also be better to collect more data from other manufacturing companies outside of South Africa such as China, and Zimbabwe. The differences in ERP implementation methodologies and their influences in organisations have not been thoroughly investigated, furthermore a discussion on what a large enterprise it has not been properly stated. It is significant to note

that the size for SMEs could differ, depending upon their locations. In this research, an attempt was made to combine ERP process research with ERP factors research and, to also establish a workable and practical ERP implementation model that would enable SME's business managers with limited knowledge of ERP implementation issues to easily understand the process required. It would also be beneficial if the final model presented by the research is further tested with a wide range of midsize business industries at different geographic locations, this will assist to identify any differences of opinion and weaknesses in the presentation of data submitted in this study. It is very important for businesses to follow the Framework as a guideline, because it will assist managers on how to run their businesses or implement an ERP system. Ramdass (2007) developed a framework for a competitive clothing and textile industries (see Figure 6.6, Chapter 6). The framework indicated a drive and commitment that management should acknowledge in clothing and textile industries regarding improvement initiatives. Industries can achieve improvements by giving employees an opportunity for training and education, and also focus more on employee empowerment, to be able to manage their own processes, and also introduce the idea of total management.

The framework in figure 2.5 was developed based on IT companies, The model focuses on Benefits of ERP and Supply Chain Management competencies The developed model consists of 5 benefits of an ERP system: Information Technology infrastructure, managerial , operational , organizational , and strategic; the model also constructs of competencies of Supply Chain Management, which are behavioural processes, planning and control, and operational ,however it did not focus on clothing and textile industries , and further did not cover some of the critical success factors of an ERP system.

Alizai (2014) model focused on procedures that helps the implementation to take place. A staged adoption model was developed to address mid-size business issues by critically evaluating the strategic issues related to it. This model was developed by identifying the three main strategies impacting the ERP implementation namely, organisational, technical and people strategies, however it did not cover ERP in clothing and Textile industries. It also adopts an integrated approach of classifying ERP CSF implementation along with the processes crucial to every stage of implementation.

This can help in improving business process, though the framework did not cover an ERP system, or factors that needs to be followed in the success of ERP implementation , as discussed in Chapter 9 (Figure 9.1 ERP framework), with the following critical success factors: Vision and planning of Project, Choice of an ERP system, Support from Top Management, Project Management, Project Champion, Business Process Re-engineering, Communication, User Training and Education, and Organizational Resistance.

Clothing and textile industries should adopt these CSF for a successful ERP implementation. The Framework should assist in developing ERP adoption and implementation. Finally, it provides a basic method for SME's suitability for adopting ERP applications, and it will be presented in future to different ERP specialists for their analysis and testing.

10.6 Conclusion of the study

As discussed in ERP literature review, there are certainly some barriers and challenges for implementing ERP and issues relating to the use of ERP applications. Therefore, this chapter laid out a number of strategies intended to overcome these. To implement an ERP system in SME's, the researcher made some recommendations, with the expectation that they be adopted and implemented. The following can be considered and recommended for as criteria for selection in SMEs:

- For a choice of an ERP system: SME's should choose a suitable ERP system which fits their company needs, and what is important prior to choosing the suitable system is the recognition that the systems are extremely complex and require enough information before one is selected. And the software should also be affordable, have a good value, as well as considerations of the costs of implementation. This will include the use of latest technology, which is why it will be best for organizations to select a product that will not be complicated to implement, and which can also meet future requirements.
- Support from top management in business is important and it must be well planned for ERP implementation system.
- Companies must select a qualified project manager who has some experience with ERP implementation
- Provide training and support to users, and decrease the possibility of resistance.
- The company should have an ERP vendor who understand their business in order to develop the application, and to have local support available once implementation is complete.
- Companies should allocate enough resources to meet the requirements and achieve the best results.
- It is obvious there are differences between issues that needs to be considered when investigating the adoption of ERP in large organization and SME's. The main objective of the study was to develop an integrated ERP adoption model for SME's businesses by assessing the strategic factors. The adoption of ERP by SME's would to be influenced by several associated factors. That is why it is significant to adopt a co-operative method, which is based upon the current study to provide a method across technical, organisational, and public areas, which identify the resource limits of SME's.

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Appendix 1.



Letter of consent

September 2018

Greetings.

Assistance for research on how to develop an integrated Enterprise Resources Planning framework for South African Clothing and Textile Industries.

I am a registered student and a Lecturer at the University of Johannesburg, currently studying towards DPhil in Engineering Management. I kindly request that all questions be completed, it should not take more than 15 minutes to complete the questionnaires.

Kind regards,

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SECTION A: General information and critical success factors for ERP adoption and implementation

Please select the appropriate option for each of the following questions:

1. General information

1.1 What is your age?

20-29	
30-39	
40-49	
50-59	
60-69	

1.2 What is the highest qualification you have achieved?

Matric	
Diploma	
Degree	
Honours	
Masters	
PhD	
Other (specify)	

1.3 What is your current position?

0-4 Years	
5-9 Years	
10-14 Years	
15-19 Years	
20 years and above	

1.4 How many years' experience do you have in this sector?

Director	
Manager	
Supervisor	
Employee	
Other (specify)	

1.5 Which of the following best describe your business type?

Clients	
Finance	
Manufacturing	
Marketing	
Other (specify)	

1.6 What is your business function? (If more than one, choose the main function)

Micro enterprise: 5 workers or less	
Small enterprise :6 – 49 workers	
Medium enterprise :50 – 200 workers	
Large enterprise : 200 and above workers	
Other (specify)	

1.7 Which of the following ERPs does your company use?

0-4 Years	
5-9 Years	
10-14 Years	
15-19 Years	
20 years and above	

1.8 How many years' experience do you have in this sector?

JD Edwards	
LN/ Baan	
Microsoft Dynamics	
Oracle	
SAP	
SYSPRO	
Other (Specify)	

1.8. For how long has your company been using the ERP chosen above?

0-4 Years	
5-9 Years	
10-14 Years	
15-19 Years	
20 years and above	

1.9. Did you use a different ERP before the one chosen above?

Yes	No

2. ERP Critical Success Factors

Below is a set of activities a company could do prior to adopting an ERP system. Please rate how well your company performed each activity prior to ERP implementation. For example, if your company was very strong on having a suitable budget for ERP projects before adoption, choose the response option 'Excellent' for that activity. If your company didn't have a clear plan for a new organizational structure prior to adoption of ERP, choose the response option 'Very poor' for that activity.

2.1 Vision and planning of Project.

	Very Poor	Poor	Average	Good	Excellent
2.1.1 Planning a new organizational structure to fit the movement of activities.					
2.1.2 Addressing the desired and expected gains from ERP business.					
2.1.3 Selecting a knowledgeable consultant					
2.1.4 Having an obvious idea regarding the ERP plan.					
2.1.5 Having a suitable budget for ERP projects.					
2.1.6 Having a clear understanding of strategic goals.					
2.1.7 Improving strategic focus in the company.					

2.2 Choice of an ERP system

	Very Poor	Poor	Average	Good	Excellent
2.2.1 Receiving presentation on particular ERP system by vendor.					
2.2.2 Having a backup of dedicated specialists to assist in the ERP implementation system.					
2.2.3 Testing carefully all existing system.					
2.2.4 Setting standards to select the system.					
2.2.5 Having sufficient capacity to implement the ERP system					

Below is a set of functions that could be performed by top management during implementation of ERP. Please rate how well top management performed each function once ERP was implemented. For example, if your top management was very strong on discussing the implementation progress, choose the response option 'Excellent' for that function. If your top management didn't appoint experts for project management during the implementation of ERP, choose the response option 'Very poor' for that function.

2.3 Support from Top Management

	Very Poor	Poor	Average	Good	Excellent
2.3.1 Discussing implementation progress.					
2.3.2 Correcting problems with the ERP implementation process.					
2.3.3 Appointing experts for project management.					
2.3.4 Distribution of resources for the ERP implementation.					
2.3.5 Establishing authorized guidelines.					
2.3.6 Supporting ERP project.					

Below is a set of functions that could be performed by a project manager during implementation of ERP. Please rate how well project managers performed each function once ERP was implemented. For example, if your project manager was very strong on communicating to workers, choose the response option 'Excellent' for that function. If your project manager didn't understand corporate procedures during the implementation of ERP, choose the response option 'Very poor' for that function.

2.4 Project Management

	Very Poor	Poor	Average	Good	Excellent
2.4.1 Establishing suitable plans for ERP implementation.					
2.4.2 Communicating to workers.					
2.4.3 Understanding corporate procedures.					
2.4.4 Having a good technical knowledge.					
2.4.5 Having a good interpersonal skills.					
2.4.6 Self -Evaluating performance.					
2.4.7 Managing the ERP project.					

Below is a set of functions that could be performed by a project manager during implementation of ERP. Please rate how well project managers performed each function once ERP was implemented. For example, if your project manager was very strong on leading ERP projects, choose the response option 'Excellent' for that function. If your project manager didn't encourage staff to adapt to the system during the implementation of ERP, choose the response option 'Very poor' for that function.

2.5 Project Champion

	Very Poor	Poor	Average	Good	Excellent
2.5.1 Resolving problems related to ERP implementation.					
2.5.2 Being a good role model for the working conduct of staff.					
2.5.3 Assisting top management in project development.					
2.5.4 Leading ERP projects.					
2.5.5 Encouraging staff to adapt to ERP the system.					
2.5.6 Improving working condition for all employees.					
2.5.7 Ensuring a successful implementation of an ERP system.					

Below is a set of activities a company could do during implementation of an ERP system. Please rate how well your company performed each activity once ERP was implemented. For example, if your company was very strong on upgrading IT infrastructure, choose the response option 'Excellent' for that activity. If your company didn't achieve data accuracy, choose the response option 'Very poor'.

2.6 Business Process Re-engineering

	Very Poor	Poor	Average	Good	Excellent
2.6.1 Changing the existing process by ERP Experts.					
2.6.2 Completing changes in the organizational structure.					
2.6.3 Changing company procedures to fit the application of ERP system.					
2.6.4 Upgrading Information Technology infrastructure					
2.6.5 Improving the process of a business.					
2.6.6 Achieving data accuracy.					
2.6.7 Ensuring technical fit of the ERP system.					

Below is a set of activities a company could do during implementation of an ERP system. Please rate how well your company performed each activity once ERP was implemented. For example, if your company was very strong on communicating ERP systems benefits to workers, choose the response option 'Excellent' for that activity. If your company didn't communicate a clear implementation plan, choose the response option 'Very poor' for that activity.

2.7 Communication

	Very Poor	Poor	Average	Good	Excellent
2.7.1 Communicating ERP system benefits to workers.					
2.7.2 Communicating the aims and objectives of the system to workers.					
2.7.3 Communicating the influence of the system on their employment conditions to the workers.					
2.7.4 Communicating the significance of the ERP system for the company to workers.					
2.7.5 Communicating a clear implementation plan.					
2.7.6 Sharing information related to ERP with stakeholders.					

Below is a set of activities a company could do during implementation of an ERP system. Please rate how well your company performed each activity once ERP was implemented. For example, if your company was very strong on recruiting a qualified implementation team, choose the response option 'Excellent' for that activity. If your company didn't involve workers in the ERP training programme, choose the response option 'Very poor' for that activity.

2.8 User Training and Education

	Very Poor	Poor	Average	Good	Excellent
2.8.1 Involving of workers in the ERP training programme.					
2.8.2 Planning training and education programs for end-users.					
2.8.3 Providing intensive training on the ERP system to all workers.					
2.8.4 Managing a training programme by ERP experts.					
2.8.5 Providing essential resources for training and development.					
2.8.6 Prioritizing training of ERP.					
2.8.7 Recruiting a qualified implementation team.					

Below is a set of activities a company could do during implementation of an ERP system. Please rate how well your company performed each activity once ERP was implemented. For example, if your company was very strong on recruiting a qualified implementation team, choose the response option 'Excellent' for that activity. If your company didn't involve workers in the ERP training programme, choose the response option 'Very poor' for that activity.

2.9 Organizational Resistance

	Very Poor	Poor	Average	Good	Excellent
2.9.1 Involving workers in the new business procedures.					
2.9.2 Informing workers regarding the significance of the ERP system.					
2.9.3 Preparing workers for the change.					
2.9.4 Having top management address resistance from workers.					
2.9.5 Providing change management in the organization.					
2.9.6 Ensuring strategic fit of the ERP in the organization.					
2.9.7 Addressing organizational resistance to the implementation of ERP					

3. Measuring quality of implementation and outcome

3.1 How would you rate the quality of implementation of the ERP system in your company?

Very Poor	Poor	Average	Good	Excellent

3.2 How satisfied is the company with the ERP system it has implemented?

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied

3.3 How easy is it to use the ERP adopted by your company?

Very difficult	Difficult	Neither difficult nor easy	Easy	Very easy

3.4 Below is a list of attributes for information used in the company. In column A rate the quality of each information attribute BEFORE implementation of the ERP and in column B rate the quality of each attribute AFTER implementation of the ERP system.

	A: Before implementation of the ERP system					B: After implementation of the ERP system				
	Very Poor	Poor	Average	Good	Excellent	Very Poor	Poor	Average	Good	Excellent
3.4.1 Quantity of information										
3.4.2 Quality of information										
3.4.3 Relevance of information										
3.4.4 Timeliness of information										
3.4.5 Reliability of information										
3.4.6 Accuracy of information										

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3.5 Below is a list of factors relevant to a company. In column A rate the quality of each factor BEFORE implementation of the ERP and in column B rate the quality of each factor AFTER implementation of the ERP system:

Factors	A: Before implementation of the ERP system					B: After implementation of the ERP system				
	Very Poor	Poor	Average	Good	Excellent	Very Poor	Poor	Average	Good	Excellent
3.5.1 Communication between the company and suppliers										
3.5.2 Communication between the company and ERP vendors										
3.5.3 Communication between the company and other partners										
3.5.4 The business relationship between the company and suppliers										
3.5.5 The business relationship between the company and ERP vendors										
3.5.6 The business relationship between the company and other partners										
3.5.7 Satisfaction of top management										
3.5.8 Satisfaction of project managers										
3.5.9 Satisfaction of employees										
3.5.10 Efficiency of processes										
3.5.11 Amount of waste generated by the company										
3.5.12 Cash flow										
3.5.13 Market share										
3.5.14 Value added productivity										
3.5.15 Profitability achieved by the company										
3.5.16 Turnover achieved by the company										

Section B: ERP adoption and implementation

Please give as detailed information as possible to the following questions:

1. Please explain fully what has motivated your business organization to implement ERP into its business activities

2. Describe the quality of the ERP training when the company started to work with the new ERP system

3. Elaborate on the implementation of the ERP system.



4. The current ERP framework is efficiently implemented by your company. Describe your response to this statement.

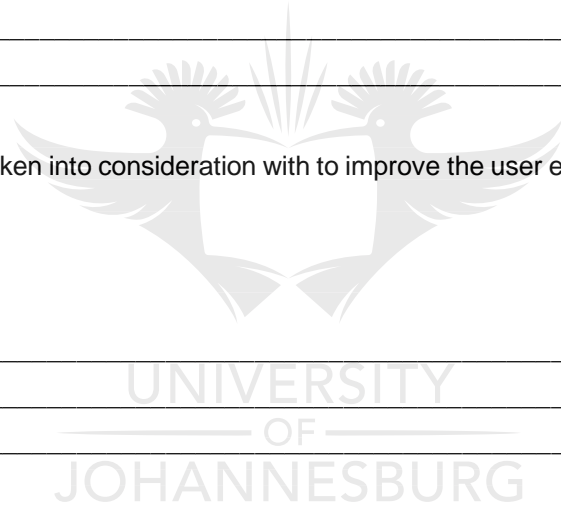
5. Explain the critical factors that have impact on ERP system implementation

6. Describe the managerial factors which have impacted on the ERP system implementation

7. Please describe the impact of the project plan and Vision on the ERP system implementation.

8. Please describe your company use of the ERP system? (Frequency?)

9. What should be taken into consideration with to improve the user experience with the new ERP system?



Clothing and Textile Industries

SECTION A: Close ended questions

Please circle the appropriate option for each of the following:

2. General information

1.1 Age.

20-29	
30-39	
40-49	
50-59	
60-69	

1.2 Highest qualification achieved.

Matric	
Diploma	
Degree	
Honours	
Masters	
PhD	
Other (specify)	

1.3 Current position.

0-4 Years	
5-9 Years	
10-14 Years	
15-19 Years	
20 years and above	

1.4 Experience

Director	
Manager	
Supervisor	
Employee	
Other (kindly specify)	

1.5 Business type

Micro enterprise: 5 workers or less	
Small enterprise :6 – 49 workers	
Medium enterprise :50 – 200 workers	
Large enterprise : 200 and above workers	

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SECTION B.1: Open ended questions (Clothing and Textile Industries)

1. How does the clothing and textile sector view Enterprise Resource Planning decisions in the different institutional and economic contexts within which they operate?

2. Please give your viewpoint of how investors in the Clothing and Textile sector view the need for ERP implementation

3. Please describe the challenges of implementing an ERP in SMEs, mainly in Clothing and Textile business

4. Please detail the incentives for implementing an ERP system in SME's, mainly in clothing and textile business

5. Please explain how you think the implementation of ERP will improve the Clothing and Textile Sector

Section B: ERP adoption and implementation

Please give as detailed information as possible to the following questions:

7. Please explain fully what has motivated your business organization to implement ERP into its business activities

8. Describe the quality of the ERP training when the company started to work with the new ERP system

9. Elaborate on the implementation of the ERP system.

10. The current ERP framework is efficiently implemented by your company. Describe your response to this statement.

11. Explain the critical factors that have impact on ERP system implementation

12. Describe the managerial factors which have impacted on the ERP system implementation

10. Please describe the impact of the project plan and Vision on the ERP system implementation.

11. Please describe your company use of the ERP system? (Frequency?)

12. What should be taken into consideration with to improve the user experience with the new ERP system?

