Strategy for the Successful Implementation of ERP systems in Zimbabwe

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ABSTRACT

Modern-day businesses have come to realise the importance of collaborating business processes and functional areas within an organisation. Enterprising Resource Planning (ERP) systems have been developed to fulfil that role - seamless integration of functional areas and business processes across departments of an organisation. In-line with understanding the indispensability of ERP systems, this study was dedicated to developing a strategy for the implementation of SAP ERP system in the context of State Owned Enterprises (SOEs) in Zimbabwe. Data was collected from ICT specialists and SAP users in the SOEs that have implemented SAP in Zimbabwe, ICT projects managers from both the SOEs and SAP implementing vendors or consultants. Quantitative data for the study was extracted from 66 SOEs' employees (including ICT specialist, ICT project managers and super user) drawn from 15 sampled SOEs. Qualitative data was collected from 9 ICT project projects managers drawn from the SAP implementing companies. This therefore means that this study was both quantitative and qualitative premised on the pragmatist philosophy. The inductive approach was employed to ensure that the proposed ERP implementation strategy is developed after collecting empirical primary data. A basic descriptive survey design was employed in which questionnaires were distributed to SOEs employees. Interviews were applied for collecting data from the SAP implementing consultants. The quantitative data was analysed using SPSS version 20 and Microsoft Excel 2010 to summarise the statistical results in the form of tables, pie charts and bar graphs. Thematic analysis approach was applied to analyse the qualitative data. The collected empirical qualitative data was also used as corroborating evidence to the quantitative analysis results in the form of verbatim quotes extracted from the key informants.

The research findings pointed to the following ERP implementation order of challenges: lack of sound technical support services, high SAP implementation costs, and technical complexity of the SAP ERP system, insufficient customised training, poor project management, unreliable ICT infrastructure, and reluctance by employees to adopt the SAP ERP system. The indicated top critical success factors included clear understanding of strategic organisation goals, commitment by top management support, excellent project management, competent implementation team, extensive education and training. The researcher developed an SAP ERP implementation strategy with the following critical components: Project Hand Over Protocol, document sign-offs, pre-sales activities, training, sound system configuration procedures, extensive system testing, a sound base ICT infrastructure, sound change management procedures, administration and support, proper project scheduling, key stakeholder involvement, reporting and analytics components, and an agile implementation methodology. The researcher recommended that careful consideration has to be done in developing a problem centred business case, assessing business needs, defining objectives and selecting a vendor in-line with tailored needs of an SOE.

DECLARATION

I, **Tanatsiwa Gobvu,** hereby declare that I am the sole author of this dissertation. I authorize the **Midlands State University** to lend this dissertation to other institutions or individuals for the purpose of scholarly research.

Signature: …….

Date: ……....

APPROVAL

This dissertation, entitled **"Strategy for the Successful Implementation of ERP systems in Zimbabwe"** by **Tanatsiwa Gobvu** meets the regulations governing the award of the degree of **BSc Honours Information Systems** of the **Midlands State University,** and is approved for its contribution to knowledge and literary presentation.

Supervisor's Signature: …….

Date: ……..

Co-Supervisor's Signature: ……

Date: ……..

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DEDICATION

I dedicate this research to my husband and three children.

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LIST OF ACRONYMS

ASAP: Accelerated Systems Applications and Products in Data Processing

BPR: Business Process Reengineering

CCMS: Computing Center Management System

COTS: Commercial off The Shelf Applications

DEMOS: Demonstrations

ERP: Enterprise Resource Planning

ICT: Information and Communication Technology

OCM: Organisational Change Management

OSS : Online Support Services

LSMW: Legacy System Migration Workbench

MRP: Material Resource Planning

R AND A's: Roles and Authorisations

RFC: Remote Function Calls

SAP: Systems Applications and Products in Data Processing

SOE: State Owned Enterprise

SNC: Secure Network Communication

UATP: User Acceptance Test Procedures

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CHAPTER 1: INTRODUCTION AND OVERVIEW OF THE RESEARCH

1.1 Introduction

Enterprise Resource Planning (ERP) systems have developed to be among the most widespread used information and communication technology (ICT) solutions used by organisations across the globe. Holland and Light (2003) define Enterprise Resource Planning systems as "enterprise information systems that seamlessly integrate multiple functional areas within an organisation. ERP software automates business activities such as manufacturing, human resource management, finance, sales, purchases, production, inventory control, financial transactions, and supply chain management." (p.97). In line with Motiwalla and Thompson (2012) ERP systems facilitate real-time information flow across various departments within an organisation. Hasheela-Mufeti and Smolander (2017) further state that "Enterprise Resource Planning systems are now the preferred method by which businesses replace legacy systems." (p.6). However, not all organisations have succeeded in effectively implementing ERP systems. Altamony, Tarhin, Al-Salti and Gharaibeh (2016) report that new ERP systems fail at the rate of 60% to 90%. In Zimbabwe most state-owned enterprises (SOEs) have been experiencing difficulties in effectively adopting SAP ERP systems. Consequently this scenario gave rise to the need to develop a strategy to effectively implement ERP systems in SOEs in Zimbabwe, so as to enhance the performance of these organisations. This research undertaking was essential as the previously conducted studies in Zimbabwe did not cover the development of an all-inclusive ERP implementation strategy. Hence this gap motivated the researcher to conduct a research in a Zimbabwean-based context, holistically targeting all government-owned companies that have implemented the SAP ERP system. The main purpose of this study was to come up with an effective strategy for the implementation of SAP Enterprise Resource Planning Systems in State-Owned Enterprises in Zimbabwe.

1.2 Background of the Study

The origin of the ERP system goes back to Material Requirements Planning (MRP) systems that were adopted by business organisations in 1970s and 1980s (Bindi, 2016). Motiwalla and Thompson (2012) also state that there has been significant growth of organisational expenditure

on Enterprise Resource Planning since the 1990s. Thus ERP systems are now used by most large private sector firms and many public sector organisations in both developed and developing countries. This was concurred by Hasheela-Mufeti and Smolander (2017) adding that of late many small to medium enterprises have also embraced the need to implement ERP systems to enhance their competitiveness. According to Hilletofth (2010) new trends in globalisation and competition as well as advances in modern information and communication technology are some of the major drivers leading to the adoption of ERP systems worldwide.

ERP systems have been credited with many benefits that are vital to the performance of business organisations. In line with Ram, Wu & Tagg (2014) ERP systems are used mainly to gain strategic and competitive advantages as well as in strategically transforming business processes so that they can be easily traced and monitored. Ramburn, Seymour and Avinaash (2013) agree with these sentiments, explaining that the competitive advantage that businesses obtain from an effectively implemented ERP system include reduced cycle time, faster transactions, integrating the entire organisation and providing real-time information. In addition Hilletofth (2010) point out that ERP systems are very useful in ensuring rapid and efficient business operations. At the same time ERP systems consist of integrated applications which provide up to date and comprehensive information about business systems and processes. This enables decision makers to be well informed about the state of the business and its operations thus improving decision making. In the same vein operational processes are easily monitored thus improving transparency and accountability within the business (Bindi, 2016). Garg and Garg (2013) also add that ERP systems create integrated and a smooth-flowing supply chain between the company, suppliers, and customers. Furthermore researchers have claimed that the ERP systems are one of the primary keys for gaining competitive advantage in the market and to optimize an entire supply chain (Gunasekaran , Lai and Cheng, 2008).

On the other hand it is paramount to note that the benefits of ERP systems can only be obtained if the ERP system is successfully implemented. This concurs with Motiwalla and Thompson (2012) who indicate that it is very crucial to have a properly functioning ERP-system in order to survive in the current highly globalized and highly competitive environment. Yet according to Altamony et al. (2016) past studies have observed high rates of failure of ERP system

implementation of 60% to 90%. Past researchers argue that there is a high level of technical complexity related to the implementation of an ERP system and that many organisations do not have the knowledge and skills needed to successfully conduct an implementation project (Swanier, 2016). According to Hasheela-Mufeti and Smolander (2017) several ERP systems implementation in multinational companies have encountered problems resulting in the abandonment of the implementation projects in worst cases scenarios. The rate of failure of ERP systems implementation is worrisome considering the huge financial investments involved in ERP systems implementation. Kilic, Zaim and Delen, (2014) state that depending on the size of the organisation, an ERP system implementation project may cost a few million dollars and may last up to 6 months to implement for small size firms and hundreds of millions of dollars and several years for larger organisations.

Consequently knowledge and effective strategies for the successful implementation of ERP systems are very crucial in ensuring competitiveness and effective use of time and financial resources. Shatat (2015) further explain that knowledge of the critical success factors (CSFs) for ERP systems implementation is very important in ensuring ERP implementation project success. "Some business owners implement complex ERP software systems without fully understanding the critical success factors (CSFs) that drive a successful implementation of ERP systems" (Garg & Garg, 2014, 498). Such undertakings usually result in ERP implementation failure causing insurmountable losses to the organisations, apart from failing to accrue the benefits of utilizing ERP systems.

State-owned enterprises in Zimbabwe have been among the many organisations that have implemented the SAP ERP system. However the performance of the sector has remained very low despite these efforts. There are about 78 SOEs in Zimbabwe which are owned and run by the government (Transparency International Zimbabwe (2015). According to World Bank (2017) most of these firms have been experiencing very low profit levels. Ncube and Maunganidze (2014) concur with this adding that firms like the National Railways of Zimbabwe (NRZ) have for a long time been failing to pay wages to their employees resulting in poor staff motivation. At the same time the Zimbabwe Electricity Supply Authority (ZESA) among several other SOEs has been struggling to pay their creditors leading to withdrawal of service. The Ministry of State

Enterprises and Parastatals Internal Memo (2012) also revealed that companies like NRZ, Zimbabwe United Passenger Company (ZUPCO) and Air Zimbabwe have been on the verge of collapse for a long time. The Ministry of Finance and Economic Development (2015) also support this, revealing that the Zimbabwe Broadcasting Corporation (ZBC) has been technically insolvent since 2005. These circumstances point out to very poor performance in SOEs in Zimbabwe.

Among the main challenges hindering the performance of SOEs in Zimbabwe include poor decision making. This was revealed by the World Bank (2017) highlighting that SOEs are failing to come up with effective decisions to adapt to the hostile economic environment in Zimbabwe. In addition there have been complaints about the absence of transparency and accountability in SOEs in Zimbabwe. For instance Transparency International Zimbabwe (2015) reported the looting of over US$10 million through overpricing of tenders. Mutanda (2014) also revealed fraudulent activities by the then ZBC CEO Happison Muchechetere consisting of close to US$1 million. At the same time Muzapu, Havadi, Mandizvidza and Xiongyi (2016) lamented the poor levels of efficiency in most SOEs in Zimbabwe.

In line with Garg and Garg (2014) most of these challenges can be neutralised through effective implementation of ERP systems. Yet SOEs in Zimbabwe have failed to successfully implement ERP systems to enhance the management of information within their processes and structures. This is evidenced by the fact that there is little or no training of staff on the utilization of the SAP ERP system utilized by most of these organisations (Seymour, Ramburn and Gopaul, 2016). The researcher who has worked on evaluating the implementation of SAP in SOEs has also observed that implementing companies rarely follow the Accelerated SAP (ASAP) Methodology provided for SAP vendors for the effective implementation of the SAP ERP system. In addition Charuma (2012) identified poor leadership commitment towards the implementation of Enterprise Resource Planning systems as one of the main factors leading to the failure of ERP system implementation at Hwange Colliery. At the same time the Office of the Auditor-General Report (2018) indicated a number of irregularities involving entry of transactions in duplicate accounts and failure to charge civil penalties on outstanding remittances in the SAP ERP system used by the Zimbabwe Revenue Authority (ZIMRA). The same report also lamented the continued use of

manual billing systems in most public health service delivery outlets resulting in losses of revenue due to errors and pilferage. It was therefore against this background that the study sought to come up with effective strategies for implementing ERP systems in SOEs in Zimbabwe so as to improve the performance of the sector and optimise returns for the government.

1.3 Statement of the problem

According to the Financial Gazette (2017), "6 of 10% of SOEs ERP implementations were faced with delays which ranged from 2-12 years and incurred an additional cost of usd$3.2million. Five of the 10 ERP implementations incurred cost increases ranging from $3 million to $7.4 million" (p.11). The general business problem was there was a need for strategies to realign business processes to implement ERP systems successfully in SOEs. The challenges faced in implementing the ERPs were attributed to lack of knowledge and strategic planning.

Other ERP systems have been associated with schedule delays which then translate into increased costs far above the budgeted ones as highlighted by (Bloch, Blumberg, & Laartz, 2012). In Zimbabwe many SOEs have had ERP implementations. However, despite implementation of ERP systems, performance in the organisations has remained very low. The organisations have also continued to face challenges of poor decision making, poor transparency and accountability as well as poor efficiency. Garg & Garg (2014) state that these challenges can easily be eliminated by the successful implementation of Enterprise Resource Planning systems.

Findings by a local audit firm pointed to existing non-efficient system processes and bottle necks in implemented ERP systems across most of the organisations (Deloittes, 2017). Charuma (2012) also indicated that strategies in SOEs like Hwange Colliery. In addition the Auditor-General Report (2018) unearthed several shortcomings of ERP systems used in government institutions and parastatals leading to poor accountability and massive losses of revenue to government.

In summary the problem statement is that ERP system implementations are either not complete, delayed or not well-implemented lacking strategic alignment of the ERP business processes with the business objectives, such that there is poor decision making, poor transparency, poor accountability and poor efficiency in State Owned Enterprises.

1.4 Research Objectives

Following the definition of the research problem as stated in the previous sub-section, the aim of undertaking this study is to solve the issue of poor ERP implementations in SOEs in Zimbabwe. The objectives of the study are outlined in the following subsection.

1.4.1 Main Research Objective

The main objective of this study was to develop a strategy which can be adopted to facilitate successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe.

1.4.2 Secondary Objectives

The primary research objective was supported by the following subsidiary objectives:

i. To establish strategies which are currently being used for the implementation of the SAP ERP system in SOEs in Zimbabwe?
ii. To identify the factors contributing towards the current ERP implementation failure in SOEs in Zimbabwe.
iii. To find out critical success factors which should be included in a strategy that facilitates successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe.
iv. To highlight the key stakeholders that should be included in an ERP system implementation strategy for SOEs in Zimbabwe.

1.5 Research Questions

In order to fulfil the research objectives stated in the previous subsection, some research questions need to be answered. The research questions guiding this research are presented in the following subsections.

1.5.1 Primary Question

Which strategy can be adopted to facilitate successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe?

1.5.2 Secondary Questions

The primary research question was supported by the following secondary questions:

i. What strategies are currently being used for the implementation of the SAP ERP system in SOEs in Zimbabwe?
ii. What factors are contributing towards the current ERP implementation failure in SOEs in Zimbabwe?
iii. What critical success factors should be included in a strategy that facilitates successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe?
iv. What key stakeholders should be included in the ERP system implementation strategy in SOEs in Zimbabwe?

1.6 Significance of the Study

The study would be very crucial to several stakeholders, among them ERP Implementing companies, SOEs, government and scholars of management information systems. It would come up with an effective strategy to ensure the successful implementation of ERP systems in SOEs in Zimbabwe. As a result the SOEs would be able to benefit from the usefulness of ERP systems in business organisations including improving decision making, promoting transparency and accountability and enhancing efficiency thus improving the performance of the SOEs.

The study would also be of immense interest to the government of Zimbabwe as the key shareholder and policymaker in SOEs in Zimbabwe. The study would indulge the government with the best strategy to facilitate effective implementation of ERP systems among SOEs in Zimbabwe. This would enable the government to know what its business organisations should do to effectively adopt ERP systems thus helping it to advocate for effective policies to enhance the performance of SOEs in the country. In addition the study would proffer recommendations on what the ERP Implementing companies should do in aiding the successful implementation of ERP systems in SOEs. These suggestions would also be very important in enhancing the knowledge and ability of the key stakeholders in the ERP implementation.

Above that the study would help a great deal in providing new knowledge on the best way to successfully implement SAP ERP systems in state-owned enterprises in developing countries

like Zimbabwe. This is on account of the fact that most previous studies on the subject have focused on privately owned businesses which have different governance frameworks from state-owned enterprises. This is particularly true with respect to Southern Africa and other regions at similar stages of economic development that came late to the privatisation and commercialisation of government entities. Thus the study would come up with new knowledge that would reinforce the knowledge and skills of management information systems scholars in dealing with the implementation of Enterprise Resource Planning systems.

1.7 Assumptions of the study

The study was based on the following assumptions;

i. There would be no government policy change affecting the implementation of ERP systems in SOEs during the course of the study.
ii. Personnel in selected organisations to participate in the study would provide true information concerning their opinions and perspectives regarding the research questions.
iii. Government and SOEs' public relations offices would be willing to provide all documents necessary in characterising the implementation of ERP systems in SOEs in Zimbabwe.

1.8 Limitations of the study

Limitations represent factors such as defects and conditions that are beyond the control of the researcher as highlighted by Silverman (2016). This study was limited by the scope of time available for the research. This resulted in the researcher focusing on SOEs in Harare that have implemented SAP ERP systems in order to limit the amount of time needed to undertake the study. In addition the study was also limited in terms of financial resources to undertake the study. Apart from delimiting the study to Harare the researcher also made use of cheaper methods of data collection to triangulate interview findings which included document analysis and self-administered questionnaires. At the same time there were a limited number of available stakeholders and companies with experience in SAP ERP system implementations in SOEs in Zimbabwe. The participants for this study were required to have experience in the implementation of an ERP system in Zimbabwe. Due to the highlighted limitation, the

researcher had to use the available participants while at the same time making extensive use of literature on the implementation of ERP systems in SOEs in other developing countries comparable to Zimbabwe.

1.9 Delimitations of the study

"Delimitations are characteristics that narrow the scope and determine the boundaries of the study set by the researcher." (Leedy & Ormrod 2010, p.195). Delimitations are choices made by the researcher and adapted for use in the research to confine it to a particular set of boundaries. Concerning the time scope, this research involved the time period stretching from 2010 to September 2018. This was mainly because this period witnessed the introduction of ERP systems in most SOEs in Zimbabwe thus would provide important insights towards fulfilling the study objectives. The geographical scope of the study was limited to Harare where the researcher was able to travel within reasonable distances to collect data from the participants thus limiting the time and resources needed to undertake the study. The researcher collected data from key informants in ERP system implementing companies in Harare as they could provide crucial knowledge on how best to succeed in implementing ERP systems in SOEs. Additional data was obtained from managers and employees in the IT departments of SOEs' headquarters in Harare. The earmarked research data providers had practical experience of the challenges and strategies associated with ERP system implementations.

1.10 Definition of special terms

Competitive advantage: Outperforming others or obtaining a larger market share that that of other firms in the same industry (Kotler and Keller, 2013)

Enterprise Resource Planning: "Enterprise information systems that seamlessly integrate multiple functional areas within an organisation. ERP software automates core corporate activities such as manufacturing, human resource, finance, organisational business processes for sales, purchases, production, inventory movements, financial transactions, and supply chain management" (Holland et al., 2003, p.97).

ERP Implementation Success: Fulfilling the main goals of ERP implementation including enhanced access to information, improved efficiency, reduced cycle time and automation of business processes (Hasheela-Mufeti and Smolander, 2017).

State-Owned Enterprises: Businesses in which the government is the majority shareholder (Ncube and Maunganidze, 2014).

1.11 Chapter summary

This chapter was mainly aimed at introducing the research subject and providing the overview of the research. It began by defining ERP and explaining the need to undertake the study on a strategy for the effective implementation of ERP systems in SOEs in Zimbabwe. The chapter moved on to the background of the study which explained the origins of ERP systems, benefits of ERP systems as well as various challenges being faced by SOEs in Zimbabwe. In the statement of the problem it was noted that the study was motivated by the problem of ERP implementation of failures as well as challenges of poor decision making, poor transparency and accountability and poor efficiency. The chapter went on to underscore the research objectives, research questions, significance, assumptions, limitations and delimitations of the study. It concluded by defining special terms used in the study. The following chapter is aimed at reviewing literature on ERP implementation in SOEs.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The first chapter introduced the topic of research which is centred on developing a strategy for the successful implementations of ERP systems in SOEs in Zimbabwe. Realising the low adoption of ERPs and high failures rates, the researcher delved into solving this problem. The supporting objectives of the study which are to determine the current implementation strategies, the extent to which implemented ERPs meet planned implementation scope and the reasons for ERP implementation failure where outlined. This section provides the theoretical literature as well as empirical literature drawn from past studies relating with the research problem indicated in this study. "A literature review is a systematic, topic focused, reproducible method of identifying, evaluating and interpreting existing literature (a body of recorded work) that has been produced by scholars, researchers and practitioners" (Lambert & Clinton, 2010, p.1). A thematic approach was taken in presenting the literature. A thematic literature review presents literature from different sources grouped according to theoretical concepts. This made the analysis of the literature easier on the part of the researcher. Review of the gathered literature brought out the research gaps motivating this research undertaking. The following subsections will present the results of studies conducted by other scholars' as well present theories relating to ERP implementation.

2.2 Theoretical Framework

2.2.1 Theory of Constraints

Eli Goldratt proposed the Theory of Constraints (TOC) which is a change-management philosophy that organizations may employ in order to accomplish their goals. Selection of the right ERP can assist an organization in achieving its goals. Choosing the right ERP is very crucial and in order to do this, organizations should answer questions such as which objective will be fulfilled by the ERP, to what degree will the ERP help in achieving objectives and at what stage, which ERP systems are available on the market that fulfil their needs and how the implementation will be done.

The TOC facilitates definition of the relationship between a business's constraints and its performance. Application of the TOC ensures that adoption of an ERP system process is a business decision based on some pre-defined goals that are measureable.

According to the TOC, an organizations performance can be assessed and managed based on the below measures:

i. throughput
ii. inventory
iii. operational expenses

"A business benefit is only real if it results in increased throughput, reduced inventory, or reduced operating expenses" (Passingham, 2011).

The TOC should be applied throughout the project life cycle as ERP implementation affects organisations on "business processes, business systems and employee levels".

The implementation of an ERP system requires business process reengineering (BPR) resulting in realignment of roles and responsibilities within an organisation. It is therefore important that organisations consider constraints in BPR and select a system that is the closest fit for their business which will result in the need for less customisation and reduced implementation costs associated with customisation.

The Theory of constraints can therefore guide the process of selection of an appropriate ERP system which will aide in understanding why ERP implementations in Zimbabwean SOEs fail.

2.3 Conceptual Framework

According to Camp (2001), "a conceptual framework is a structure which the researcher believes can best explain the natural progression of a phenomenon to be studied." (p.27). A conceptual framework is "linked with the concepts, empirical research and important theories used in promoting and systemizing the knowledge espoused by the researcher." (Peshkin 1993, p.23).

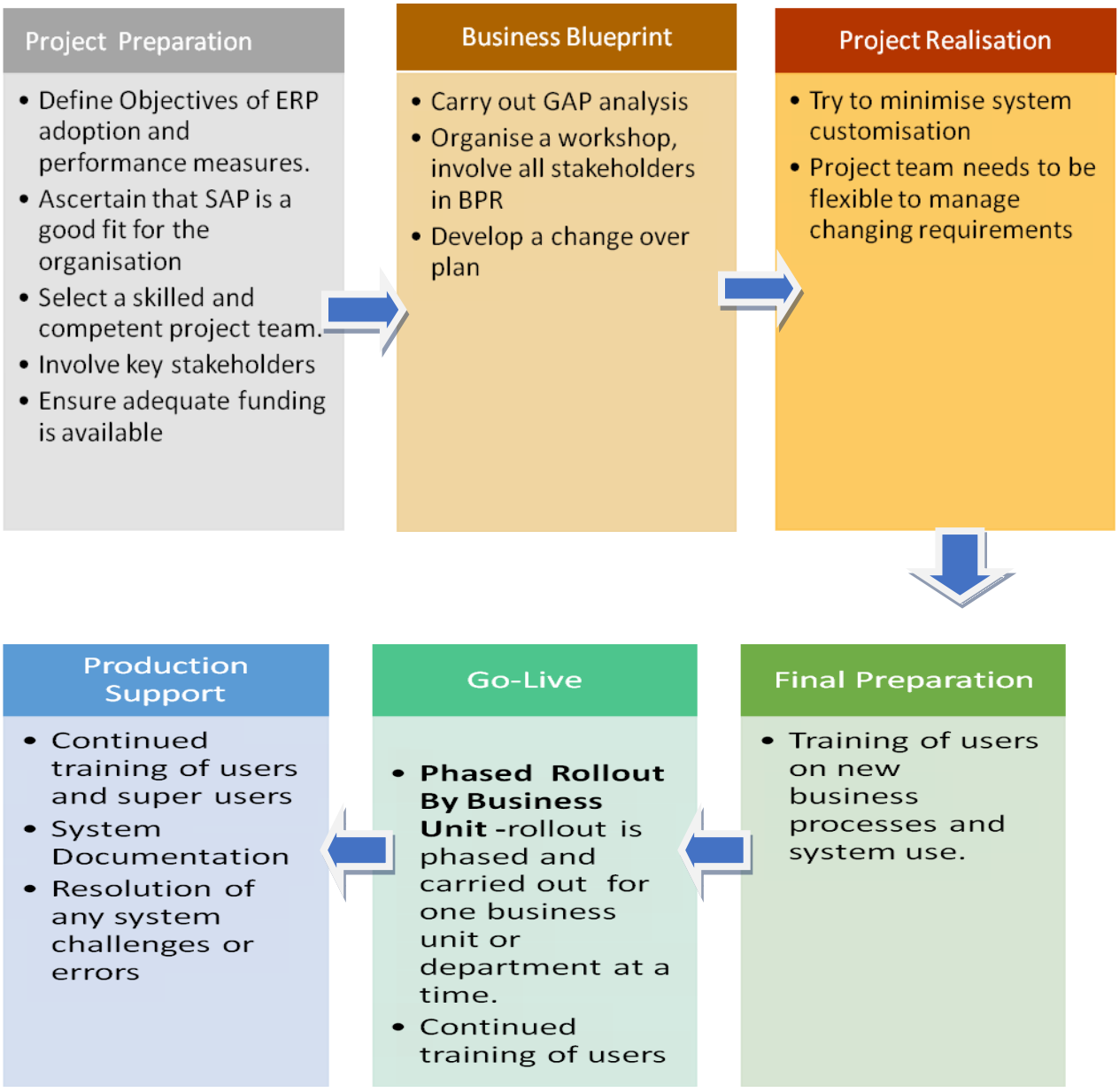


Figure 2.1: Conceptual Framework for an ERP system implementation

Project Preparation

SAP ERP implementation should map organisations processes to the pre-defined one in SAP. In order to achieve this, the implementation team requires people with complete knowledge of the organisations business processes. The project preparation phase, should identify these individuals.

Business Blueprint

The ERP implementation blueprint established what SAP modules are required and mapping the existing business processes to the processes provided by SAP.

Realisation

Realisation phase involves the actual work of customising the SAP software to be in sync with organisations business processes.

Testing

The implemented modules should be tested for conformance to business requirements and to establish if everything is working as it should. Unit and system testing are carried out.

Final Preparation

In this phase, the production system is set up using the changes from the realisation and testing phases.

Go-live

In this phase, the system is deployed for users to start work. The go-live implementation strategy maybe a big bang, phased, parallel or hybrid approach.

Support

Following go-live, the next step is maintaining and supporting the system.

2.4 ERP System

ERP is “the technology that provides the unified business function to the organization by integrating the core processes” (Mutongwa &Rabah 2013, p.872). According to Ross and Vitale

(2000), ERP systems “improve the organisation context by integrating all the disparate data into a unique database”. Ross and Vitale (2000) are of the opinion that ERP systems should improve on internal processing by providing standardization, reduce operational costs, facilitate for good client and supplier relations as well as aiding in decision making processes. “ERP is known to improve efficiency, performance as well as productivity, and it is regarded as a strategic resource by organizations, providing competitive advantage and a strong market position” (Law and Ngai, 2007). ERPs integrate business functions on one single platform which connects to a single database thereby improving productivity in the business (Huang and Palvia, 2001). Nicolaou (2004) also agrees with Mutongwa and Rabahs (2013) belief that organizational productivity is brought about by ERPs as a result of the integration of business processes. “The major advantages of ERP systems over application software suites lie in their consequent integration of accounting transaction processes with workflow, design, and engineering management. It is widely reported that enterprise-wide applications promise seamless integration of all information flowing through a company’s accounting and financial information, human resources information, supply chain information, and customer information organization” (Nicolaou, 2014).

In a case study carried out by Elragal and Al-Serafi (2011), the authors established a relationship between the adoption of Enterprise Resource Planning and industry achievement. According to the study, the major concerns of organisations that decided to adopt ERP were reduction of costs, improving workflow and collaboration, maintaining client and supplier relations. The study showed that companies that adopted ERP realised a of lot benefits, chief among them the reduction of costs compared to those that did not implement ERP.

The implementation of ERP is a costly and complex endeavour as it involves large investments; typically only large organisations are able to meet these demands (Andriole, 2006). Tome & Leo (2014), Ramburn et al. (2013), Grabski, Leech & Schimdt (2011) agree with the notion that ERP implementation is complex and requires a huge financial commitment. The cost of implementation does not only include the cost of purchasing and licensing the software, a lot of overheads such as hardware requirements, project management, configuration, customisation and user training come into play Rajapakse and Seddon (2005).

2.5 Critical Success and Failure Factors

Many of the studies relating to ERP implementation have been centred on determining the factures that lead to successful or failed ERP implementations. Abdelghaffar (2012) argued that "75% of ERP implementation attempts are classified as failures". The Panorama group (2013) are of the opinion that ERP failure is not limited just budget over runs and implementation delays but also "the overall business benefits and return on investment". In studies to determine critical success factors, the environment in which the study is conducted is of paramount importance since the impact of a factor may differ from one context to another (Momoh and Shehab, 2010).

Abdelghaffar (2012) in studying ERP implementation success in Egypt identified that factors leading to ERP implementation success were categorised into environmental and organisational factors. Mohamed (2015) in his study of Egyptian hotels deemed the following to be critical success factors; the employment of skilled ERP consultants, minimal customisation of the system, staff training and involvement of various stakeholders.

In studies conducted in Kenya, Njihia and Mwirigi (2014) noted executive management involvement, availability of adequate funds, organisational structures, staff involvement and attitude to be key in the successful ERP implementations in Kenyan SMEs. Frimpon (2012) conducted a study to determine factors critical for successful ERP implementation in the Educational sector. The findings of the study categorised the success factors into 5 categories which are "top management, technology management, process management, change management and project management" (Frimpon, 2012).

Yaseen (2009) conducted a multi-case case study on pharmaceutical companies in order to study issues that affect ERP adoption. His studies were based on pharmaceutical companies that had adopted Enterprise Resource Planning solutions. The aims of the study were to determine factors that led to successful or failed ERP implementations in relation to capitalising on ERP capabilities in order to improve organisational performance. The results of the study showed that the pharmaceutical companies under study under-utilised the abilities of ERP systems with only ten percent of the systems capabilities being exploited. The researcher noted other reasons for

ERP failure as being financial resource constraints, complexity of the adoption of ERP and resistance to change by users.

Some researchers have examined the factors that aid in the success of ERP implementation in. In a study of South-African companies, Mushavhanamadi and Mbohwa (2013) cited lack funds, no steering boards and lack of expertise as the major reasons for failure of ERP implementations. Further to these reasons, Ramburn et al. (2013) cited "lack of training, lack of technical and process knowledge and lack of good change management strategies" (p.215) as causes of ERP implementation failure.

According to Lee, Hon., Katerattanakul & Kim (2012), "constraints of implementing ERP systems include costly customization; risky investment; and the lack compatibility with business and strategic plans. Developing an explicit linkage between the organization goals and expectations of an ERP system is significant and can help manage the strategic business objectives" (p.1942). In order to derive value from ERP implementation, organisation should consider their business process and how and ERP can replicate this. "Organizational culture includes beliefs, values, behavioural norms, and collective experiences" (Chockalingam & Ramayah, 2013). Chockalingam and Ramayah believed that coporate culture can affect the outcome of an ERP implementation. Hong & Kim (2007) and Marnewick and Labuschagne (2006) in their studies showed that implementation failure can be as a result of a poor change management plan.

When ERP systems are developed, there are some best practices that are suggested in order to realise maximum benefits from the ERP solution. The manner in which developing countries conduct business is different from how developed countries conduct business. Most ERPs are developed in developed nations therefore these ERP best practises can easily adopted by organizations in developed countries. In studies conducted in South Africa, Bitsini (2015) came to the realisation that "organizations in Africa are characterized by specific laws and government regulations, as well as a specific way of doing business that are different from those that pertain in the developed countries". These differences then result in misalignment problems which results in organisations in developing countries not being able to fully maximise on the capabilities of ERP systems due to failure in adopting the best practices. Failure to fully utilise

ERP systems is deemed as implementation failure. In a bid to address the problem of misalignment, an Egyptian state owned enterprise customised the system. Unfortunately, this attempt failed and Kholeif, Abdel-Kader and Sherer (2007) attributed the failure lack of enthusiasm to adopt the system by end users.

Kale, Banwait and Laroiya (2008) conducted a study on ERP adoption in Indian SMEs. The researchers interviewed different ERP vendors. The research revealed prior to implementation, organisations should adequately plan for hardware requirements, workforce requirements and training of users was essential would go a long way in efforts to ensure implementation success.

Akeel and Wynn (2015) conducted research on a Libyan Oil company that implemented SAP. The study revealed that the definition of a good implementation plan played a very crucial role in the successful implementation. The strategy employed consisted of gradually replacing the legacy system modules with their corresponding SAP modules. Other success factors for the project that were noted included stakeholder involvement and careful considerations not to over burden the implementing team with tasks. The implementation was conducted in a phased approach thereby gradually migrating business process to the ERP which lessened pressure on the project team and yielded good results.

Boltena and Gomez (2012) conducted a research on an Ethiopian company that implemented an ERP developed by Microsoft aimed at understating ERP implementation success. The researched showed that putting together a competent project team and proper risk management were key in the success of the implementation. The project was broken down into smaller “sub-projects” for easier management. At any given time the focus was on the delivery of the sub-projects which saw some critical issues being addressed well. The researchers found this to be a good implementation strategy.

Hasheela-Mufeti in 2007 carried out a research aimed at identifying challenges faced by Small to Medium Enterprises in Southern Africa in adopting ERP solutions and to provide solutions to the challenges. The study based on the examination of 14 different companies revealed that successful ERP implementation required “sufficient and appropriate training, reliable internet

connection, involvement of end-users, change management, as well as sufficient demonstration of the prospective ERP system" (Hasheela-Mufeti, 2007).

ERP implementation affects all people in an organisation directly or indirectly. Kambarami et al. (2012) therefore recommend that organisations implementing ERPs take total ownership of the project and involve all key stakeholders. The authors advocated for extensive oversight on system modifications and a good change management strategy to ensure a smooth transition from old systems to the ERP system. Paradza an associate director of Advisory: systems implementation and effectiveness at Price Waterhouse Coopers advocates for the involvement of system users citing that "about 75% of all organisational change programmes fail, and it is largely because employees feel left out of the process and end up lacking motivation, skills and knowledge to adopt new systems and procedures" (Paradza, 2007).

The above literature is relevant to this study in order to understand the factors under pinning the success of other ERP implementations in other contexts outside Zimbabwe. Some critical success factors may be generic and applicable to other contexts but others are may be on a case basis. The general success factors such as top management support, user training, the need for good project and change management were noted. This research dug deep into the Zimbabwean context and determine whether these critical success factors are being applied which is what may be the reason behind failure of ERP implementations in Zimbabwean SOEs. The research sought to determine other possible success factors from SAP ERP implementations in Zimbabwean SOEs that are deemed to be successful.

2.6 ERP Failure Factors

In the above section, critical success factors were discussed. It is also prudent the failure factors should also be investigated. Spencer (2010) based on her experience as an ERP consultant presented nine reasons why ERP implementations fail. Below are the reasons she outlined:

a) Wrong priorities when choosing an ERP. A study was conducted and respondents were grouped into groups. The first group (G1) comprised of persons wishing to implement an ERP or other system for the first time and the second comprised of people wishing to

implement a system for the second or third time (G2). G1 respondents top priorities when choosing a system were price, ease of use , ease of implementation where as G2 respondents main priorities where level of support offered by the vendor, track record and experience of the vendor. G2 respondents were less concerned with price, ease of use and implementation.

b) Lack of prior cost-benefit studies. “Business management software, including ERP, is not strictly an IT decision. Since ERP software can affect every functional area of the business, ERP decisions are strategic business decision” (Spencer, n.d.). At times the decision to adopt and ERP comes from an IT perspective without looking at the larger context as to how the business will benefit and if the adoption makes any financial sense.
c) Lack of Executive support. End users will only accept the adoption of a system if management buys into it. If subordinates realize that management is not quite enthused by the systems, they too will take a lackadaisical approach to it.
d) Selecting the wrong Project Manager. More often than not, after the decision has been made to implement an ERP, business executive then hand over responsibility to the IT department which at times is not capacitated to make some business decisions like changing business processes.
e) Failure to adopt selected ERPs best practices. ERP software packages come with suggested best practices. Users may resist business process changes to comply with the best practices which may result in budget over runs in trying to customize the solution where it may be not necessary to.
f) Inadequate Implementation Budget. At times clients fails to budget adequately for implementation. Besides the cost of procuring and licensing the software, implementation requires a significant amount of money especially when implementing in large organizations.
g) Lack of Training. Lack of user training results in users not being comfortable with the system and may result in them reverting to older systems. Some users may be trained by the vendor/implementing partner to a high level of competence such that they may be able to provide level1 support of other users.

h) Lack of Communication. End users need to be kept in the loop regarding how the ERP system will affect their normal business processes. Informing end users make them feel like an important part of the project and will more likely buy into the project.
i) Lack of Technical Support. A lot of organisations overlook the need for support. In the study conducted, G1 respondents put support at number 8 on their priority list. In organizations that do not have ERP experts, it would be prudent to go with a vendor or installer that offers good supports otherwise users will get frustrated and abandon the system.

In their study, Kambarami et. al (2012) cited the below as issues that contribute towards ERP implementation failure:

- Lack of executive support
- Unrealistic expectations
- Lack of project management manpower
- Lack of user education
- Inaccurate data being fed into the ERP which results in an avalanche of negative effects.

Study of ERP failure factors was used to assess current Implementation strategies in SOEs. Lessons learnt from previous implementations and those revealed in this study was used to formulate implementation strategies aimed to succeed.

2.7 Key Stakeholders in ERP Implementations

"Stakeholders are individuals or groups of people within an organisation who have a vested interest in an ERP implementation software project's outcome and/or whose support is required to launch such a project, drive it forward to a successful conclusion and ensure that the product is utilized to its fullest extent" (Pouloudi, 1999, p.19). The adoption of ERP systems are not just a technological decision but a strategic business decision therefore various stakeholder have to be involved. "Research indicates that people issues are more to blame for the unsuccessful efforts of ERP implementations" (Khullar et al, 2011, p.7). Various studies in the area of ERP have also showed that stakeholder involvement is a critical success factor. (Law et. al, 2010) also concur

that complexity of implementing ERPs is not entirely technological "unlike other information systems, the major problems of ERP implementation are not technology related issues such as standardisation, technological complexity etc. but mostly about organisation and human related issues like resistance to change, organisational culture, project mismanagement, incompatible business processes etc."

Chang and Li (2004) presented ten reasons as to why ERP implementations fail. Most of them were related to people and some of the reasons were, lack of senior management support, lack of user support emanating from poor communication. When adopting an ERP one of major issues that affect end users is the change in business processes. Some software business process implementations vary greatly from the ones that users are used to therefore some resistance might be met. It is crucial to identify an ERP that is the closet fit to an organisations business process. It is therefore crucial to involve end users in the early stages before settling on a vendor this will also ensure eagerness to adopt the new system on the part of end users.

Aubert, Hooper and Schnepel (2013) also alluded to the fact that stakeholder involvement is key for successful ERP implementation. "A project manager and technical staff should communicate the organisation's goals and objectives of implementing ERP systems to internal and external stakeholders" (Aubert et al., 2013, p.28). According to Aubert et al (2013), "organisational leaders are strategically aligning their business strategies and supply functions into one seamless process." (p.16).

2.8 ERP Implementation Strategy

"The ERP Implementation strategy is how an organisation goes about planning and directing the deployment of an ERP application" (Dunaway 2011, p.46). According to Dunaway (2011), "ERP implementations are not just COTS (commercial off the shelf applications), but are radical changes to a company's business process, IT infrastructure, and strategic and tactical goals" (p.46) therefore there is a need for a good implementation strategy in order to realise the benefits of employing the system.

Organisations need to assess their business needs and availability of resources when choosing an implementation strategy as no one strategy is ideal for all situations. Studies show that the

implementation strategy chosen has a great bearing on the success of the implementation (Panorama Consulting Group, 2011). There are four common strategies that are used in ERP implementation:

- Big bang
- Phased rollout
- Parallel rollout
- Hybrid

2.8.1 The Big Bang Approach

The big bang approach is an implementation strategy in which the entire system goes lives at once. In as much as this strategy results in quicker deployment and is less costly, it has the following challenges:

- If one area of the implementation fails, it may have an avalanche effect on the entire system and the problem may be difficult to diagnose and rectify.
- There tends to be a decline in productivity as employees adjust to the new system.

2.8.2 Phased Rollout

With the phased rollout approach, organizations are able to realize business benefits much sooner. Phasing the rollout allows for thorough unit testing, if challenges are faced it is easy to roll back to the legacy system while the errors are being corrected on the ERP. Phasing also mitigates risk of failure as the project is broken down into small and manageable phases.

2.8.3 Parallel Rollout

Parallel rollout is an implementation strategy whereby the legacy system is kept operational in parallel with the ERP systems until there is assurance that the ERP is working well. It is considered to be one of the safest implementation strategies and is usually used in mission critical systems. In terms of delivery time, the approach is faster than a phased approach but

slower than the big bang approach. The challenge with this approach is the high costs associated with maintaining and supporting two systems and consultants have to work on the project for longer.

2.8.4 Hybrid Approach

Hybrid approaches is usually used in larger ERP implementation. With this approach, organizations may use the big bang implementation strategy for the small business units in the organization and a phased approach for the bigger units. Another scenario where the hybrid approach is used is in multi-site implementations. A big bang approach may be used for the headquarters and a phased approach for the other sites or the converse.

"A study carried out by Panorama Consulting showed that more than half (53%) of companies used a phased approach for their implementations, 35% used big bang and the rest (11%) chose a hybrid method" (Griffith, 2011). The researcher could not establish which implementation strategies are being employed in SOEs in Zimbabwe from the review of available literature which was of the objectives to fill this gap as it is evident from the existing body of knowledge that the implementation strategy employed has a bearing on the success or failure of the implementation.

2.9 Research Gaps

The study by Kambarami et al. (2012) was specifically focused on assessing the impact of SAP ERP implementation and development of customized Performance Indicator Modules. This proposed study is holistically focusing on crafting a strategy for implementing an entire SAP ERP system.

The study by Hasheela-Mufeti (2017) was particularized to implementation of ERP systems in the context of SMEs. The proposed study was not limited to SMEs since the study also covered large companies using SAP in Zimbabwe. Challenges faced in ERP implementations for SMEs could be different from those encountered in large corporate.

Boltena and Gomez's (2012) study which was conducted in the context of Africa was focusing on implementation of Microsoft ERP systems. The study specifically focused on SAP ERP system implementations in the Zimbabwean context.

Akeel and Wynn (2015) investigated the implementation of SAP ERP in a Libyan Oil company. Their findings obtained in the context of an oil company could not be generalized to all sectors of the economy. Hence, the study cut across different companies in the various sectors of the Zimbabwean economy. Some of the target companies for this research are Zimbabwe Revenue Authority, Minerals Marketing Corporation of Zimbabwe, ZESA Holdings, National Railways of Zimbabwe, Grain Marketing Board, Air Zimbabwe, National Railways of Zimbabwe, Pensions Fund, Zimbabwe Manpower Development Fund, Zimbabwe Mining Development Corporation and these companies cut across different industrial sectors.

Bitsini (2015) highlighted that the manners in which African organisations conduct business and the regulations in place in African countries are different from those in developed nations. It is therefore necessary to conduct a study specifically aimed at crafting a strategy for implementation of ERP in Zimbabwe. African countries face certain challenges such as struggling economies and lack of expertise and these are issues to be considered when developing an implementation strategy.

2.10 Literature Review Summary Table

Table 2.1 Literature Review Summary

Author, Date,	**Research Area/Theme**	**Findings**	**Relation to current research**

Country			
Aubert, Hooper and Schnepel (2013)	**Stakeholder Involvement**	The study revealed that stakeholder involvement is key for successful ERP implementation. The research revealed the need for effective communication of the organisation's objectives of implementing ERP systems to all stakeholders to obtain their buy in.	The research assists in answering the research question number 4 which seeks to determine the stakeholders that should be involved in SAP ERP implementation in Zimbabwe. Different studies carried out across the world determined the stakeholders that should be involved and they all had similar findings therefore the results of these finding can be applied in the Zimbabwean context.
Law et. al, 2010		The research revealed that the complexity of implementing ERPs is not entirely technological but in managing people, business process changes. The researcher therefore emphasised the need for stakeholder involvement.	
Mohamed, 2015, Egypt	**Critical Success Factors**	Factors contributing to ERP success were outlined as the selection of competent ERP consultants, minimum customisation, extensive employee training and involvement of all stakeholders.	The reviewed literature aides in answering research question 3 which seeks to establish the critical success factors that must be regarded for the successful implementation of SAP ERP systems in SOEs in Zimbabwe
SMEs Njihia and Mwirigi, 2014,		Availability of funds, employees perceptions, regulatory requirements and executive support were shown to be critical for the success of ERP implementations in	

Kenya		Kenyan	
Lee, Hong, Katerattanakul, and Kim, 2012	**ERP Implementation Constrains**	The researchers identified constraints to ERP implementation to include costly customisation and the lack of alignment between business strategic plans and the ERP system itself	The results of the study aided in assessing the constraints to ERP implementation that may be affecting the ERP constraints in Zimbabwe. The constraints noted in the study were probed into in this research to determine if they are valid in the Zimbabwean context
Bitsini ,2015, South Africa	**Reasons for ERP Implementation Failure**	The study revealed that misalignments between defined ERP best practices and organisational fit in the African context. The researcher attributed this misalignment to differences in the way western and African countries conduct businesses and culture.	Study of literature relating to the reasons for ERP failure aides in answering the research question 2 which seeks to explore the reasons behind ERP failure in SOE in Zimbabwe. The reviewed literature highlighted some common causes as well as causes particular to certain implementations. There is a need to carry out this study to determine the reasons for failure peculiar to Zimbabwe.
Spencer, 2010		After assessing several ERP implementations, the researcher noted that wrong priorities in choosing an ERP vendor, lack of cost-benefit analysis, lack of training, lack of executive support, failure to implement ERP best practices, poor communication and lack of technical support as some of the causes of ERP implementation failure.	
Chang and		The study highlighted lack of executive	

Li, 2004		support, lack of user support emanating from poor communication as causes of ERP implementation failure.	
Kambarami et. al 2012		The study revealed that lack of management support, unrealistic expectations, inadequate project management manpower, insufficient user education and data accuracy as reasons for implementation failure.	
Kambarami, Mhlanga and Chikowore, 2012	**SAP Implementation success in Zimbabwe**	The research was aimed at assessing the impact of SAP ERP implementations. That study highlighted weakness in the reporting systems of the implemented SAP ERP system. To remedy this, customisation based on some defined performance indicators was required.	The study took a case based approach to study the impact of SAP ERP implementation. The research outlined the steps taken to implement the system and highlighted the successes and the failures. The study showed a need to define some performance indicators which can be used to evaluate the success of ERP implementation.
Panorama Consulting Group, 2011	**Impact of Implementation Strategies on ERP success**	The study showed the different strategies that can be employed in implementing ERP systems. The study showed a correlation between the implementation strategy and the success or failure of a project	The studied literatures aids in answering research objective 1 which seeks to determine the current implementation strategies that are being employed in

			SOEs in Zimbabwe. No literature is currently available on the implementation plans being employed in SOEs in Zimbabwe but the reviewed literature gives an understanding on the strategies that can be employed and their applicability to different scenarios.

2.11 Conclusion

In conclusion, gaps in the existing body of literature were noted. Previous research on ERPs in the Zimbabwean context was focused on assessing the impact of ERP implementations on set performance indicators and also the implementation of ERPs in SOEs. This research aims to fill up the knowledge gaps in the Zimbabwean context. The following chapter which is the Research Methodology outlined the procedures and techniques employed to collect data in efforts to answer the research questions.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter gathered and analysed related literature by other researchers and authors. The various works in relation to ERP implementation were analysed and some knowledge gaps revealed some of which were filled by the outcomes of this study. This section outlines the Research Methodology applied in the study. "Research methodology defines a system of beliefs and philosophical assumptions which will shape the understanding of the research questions and underpin the choice of research methods" (Saunders, Lewis, & Thornhill 2007, p.37). The research onion developed by Saunders (2007) was used to guide the researcher in developing a research plan. The data collected aided in addressing the research questions thereby fulfilling the objectives of the research.

3.2 Research philosophy

"The concept of research philosophy refers to the progress of scientific practice based on people's views and assumptions regarding the nature of knowledge" (Saunders, Lewis, Thornhill, 2007, p.18). Saunders, Lewis and Thornhill (2015 p.124) define research philosophy as a "system of beliefs and assumptions about the development of knowledge". The pragmatic research philosophy resonates with the mixed methods approach adopted in this study. The pragmatist philosophy gives freedom to the researcher to premise the research undertaking on both the qualitative and quantitative research approaches as argued by Morgan (2007). According to Creswell (2009), pragmatist philosophy is a plurastic approach that strives to reconcile objectivism and subjectivism, facts and values, accurate and rigorous knowledge and different contextualized experiences. This philosophy is preferred in researches that are centred on research problem-solving and real-world practices. Premised on the pragmatist view, this study was centered in developing a strategy for the successful implementation of SAP ERP system in State Owned Enterprises (SOEs) in Zimbabwe – a problem-centred solving view that resonates with the pragmatist philosophy.

3.3 Research Methodology

"A research methodology is a systematic, purposeful and planned to yield data on a particular research problem." (McMillan and Schumacher 2010, p.6). William (2011) describes research methodology as "a range of tools that are used for different types of enquiry". To yield fine results, the nature of the research has to be considered when coming up with a methodology. The 'research onion' on Figure 1.1, proposed by (Saunders, 2016) is a systematic methodological framework that was adopted in the implementation of the research. The research onion provides an exhaustive description of the layers a researcher must accomplish in order to develop an effective methodology. The design of the research commenced with delineation on research philosophies or paradigm in the outer layer (main stage) of the research onion. Subsequent stages to be followed include approaches, strategies, choices, time horizons and, the techniques and procedures in data collection and analysis.

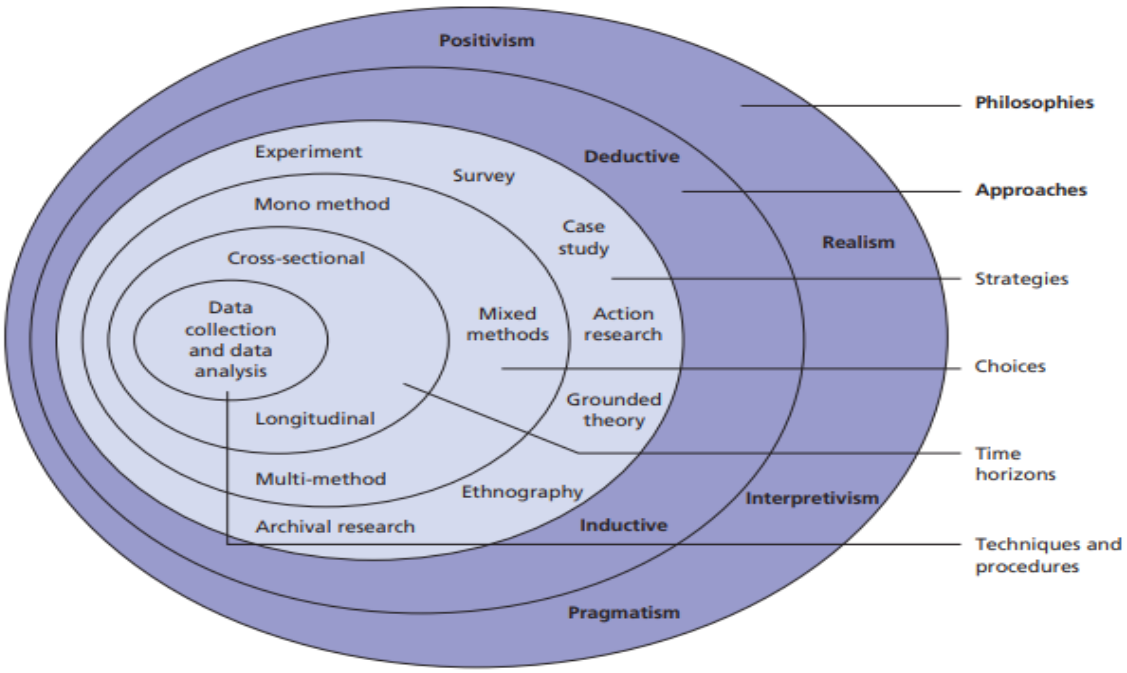


Figure 3.1: Research Onion (Saunders, 2016)

3.4 Research Design

"Research design refers to the strategy that one chooses to integrate the different components of the research in a coherent and logical way to ensure that the researcher effectively addresses the research problem; a research design is the blueprint for the collection, measurement, and analysis of data" (De Vaus 2001, p.23). Descriptive research is "aimed at casting light on current issues or problems through a process of data collection that enables researchers to describe the situation more completely than was possible without employing this method"(Ethridge 2007, p.24). Descriptive research is used when the researcher wishes to describe the state of the phenomenon under investigation. This research is descriptive in nature. According to Kothari (2005), a descriptive approach demonstrates the philosophies of a population. Another author is of the opinion that "descriptive research can assist the researchers in terms of creating data about similar population" (Kumar 2005, p.141). In this study, the researcher gave a descriptive account as to why ERP implementations fail in the context of Zimbabwe.

3.5 Research Approaches

According to Saunders et al. (2016), three types of research approaches exist; deductive, inductive and abductive. This research adopted the inductive approach which is explained below:

3.5.1 Inductive Approach

Inductive research is "the search for patterns from observation and the development of explanations or theories for those patterns through series of hypotheses" (Bernard, 2011, p.7). An inductive approach involves collection of qualitative data and developing theories following the analysis of collected data. This study adopted an inductive research approach. Data on current ERP implementation methods and reasons for failure was collected then used for the formulation of a strategy for successful implementation of ERP systems in Zimbabwe.

3.6 Study Site

The study area for the research was Harare where data was collected from employees from different state owned enterprises that use SAP ERP systems and are entirely resident or headquartered in Harare. Interviews were conducted at the various business premises of the

research subjects. The employees consisted of females and males aged at least 20 years and above with a minimum qualification of five ordinary levels as stipulated by the employment policy of the Zimbabwe government (Ncube, 2000).

3.7 Target Population

In research, population is defined as "all elements (individuals, objects and events) that meet the sample criteria for inclusion in a study" (Burns & Grove, 1993). The target population in this research is state owned enterprises that are running SAP ERP systems. There are 25 SOEs that use SAP ERP system in Zimbabwe, they have a total of 330 employees in their ICT departments therefore the target population for this study is 330.

Table 3.1: Target Population

State owned enterprise	Number of targeted employees
1.Company A	11
2 Company B	9
3.Company C	10
4. Company D	14
5. Company E	13
6. Company F	10
7. Company G	12
8. Company H	15
9. Company I	11
10.Company J	14
11.Company K	8
12. Company L	16
13. Company M	11
14. Company N	9
15. Company O	10
16. Company P	18
17. Company Q	13
18. Company R	10
19. Company S	15
20. Company T	13
21. Company U	19

22. Company V	15
23. Company W	17
24. Company X	18
25. Company Y	19
Total	330

3.8 Sampling Strategies

Sampling strategies are used to select a set of participants which represents the entire population and are dependent on the nature of the study. Taherdoost (2017) emphasizes the importance of sampling as it is at times impossible to collect data from an entire population. The target population in this study is drawn from 25 organisations. Due to time constraints and accessibility of some companies using SAP, it would not be possible to cover all 25 organisations. The researcher made use of purposive sampling. According to Oliver (2006), purposive sampling is "a form of non-probability sampling in which decisions concerning the participants to be included in the sample are taken by the researcher, based on various reasons which may include specialist knowledge of the research issue, or capacity and willingness to participate in the research". Purposive sampling involves the deliberate selection of respondents due to the qualities they possess.

Purposive sampling is inherently biased because of how the researcher picks the respondents but it is also this bias that results in the yielding of good quality data. "Data gathering is crucial in research, as the data is meant to contribute to a better understanding of a theoretical framework" (Bernard, 2002, p.382). Taplay (2007) noted that in order to reap maximum value from purposive sampling, the researcher must include participants with a variety of roles. The researcher therefore made sure that research subjects included top level managers in organizations, ICT specialists, SAP projects implementation champions and super users.

3.8.1 Justification of Sampling Technique

With purposive sampling, the researcher decides "what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience" (Bernard, 2002, p.391). For this reason, the researcher chose purposive sampling in order to target SOEs that have implemented SAP ERP.

3.9 Sample Size

The number of companies to be selected as the sample was determined using the Cochran's Formula which is stated below:

$$n_0 = \frac{Z^2 pq}{e^2}$$

- e is the desired level of precision, in this case a 90% precision is required therefore permissible margin of error is 0.1
- p is the (estimated) proportion of the population which has the attribute in question, in this case, we assume 73%
- q is 1 – p.

The z-value derived from the Z table corresponds to 1.96.

[(1.96)^2(0.73)(0.0.27)/(0.1)^2]= 15

The researcher ensured that the 15 companies were selected from the population of targeted 25 SOEs that have implemented SAP ERP system. In terms of the actual number of employees selected to be sample subjects, the researcher calculated the sample size using the Raosoft sample size calculator. Based on the following parameters - Margin of error used: 10 percent, Confidence level of 95%, response distribution of 50% and population size of 330, the Raosoft calculator retain a sample of 75 employees. Thus, the sample size for this study was 75 employees selected from 15 SOEs that have implemented SAP system in Zimbabwe.

3.10 Data Collection

Since a mixed methodological approach was used for this study, the data collection was achieved by using a qualitative and quantitative data collection technique. For the purposes of collecting data, the research instruments were questionnaires with open ended and closed ended questions

followed by interviews and also the use of secondary data. Both data collection instruments were designed to address key issues in line with answering the research questions. There are two types of data that are used in research, primary data and secondary data.

3.10.1 Primary Data

Primary data is "data that is collected by a researcher from first-hand sources, through surveys, interviews, or experiments. It is collected with the research project in mind, directly from primary sources" (Anon, 2017). This research adopted primary data collection methods through questionnaires and interviews. The researcher required more primary data to answer the research questions. In this study primary data was collected using open ended questionnaires and interviews. So use of primary data was advantageous as the data collected was current, relevant and specific to addressing the research objectives of this study.

3.10.2 Questionnaires

"A questionnaire is a printed self-report form designed to elicit information that can be obtained through the written responses of the subjects (Burns & Grove 1993, p.68). The information obtained through a questionnaire is similar to that obtained by an interview, but the questions tend to have less depth" (Burns & Grove 1993, p.68). Questionnaires can consist of close ended questions, open ended questions or a mixture of both. Wikipedia (2019) defines close ended questions as "any question for which a researcher provides research participants with options from which to choose a response". To extract detailed qualitative data from the respondents, more open ended questions were used in conjunction with some closed ended questions. The greatest advantage of having open-ended questions is that they allow one to be able to explore more than that which they had anticipated to find. Closed ended questions are easy to answer, easy to code and analyse and eliminate irrelevant/incorrect answers but they do not offer enough details and answers and do not probe respondents do give more details on the answers they have given. In order to get a deeper understanding of certain phenomena, closed ended questions were supported by open ended questions.

The researcher distributed physical copies of the questionnaires in person to respondents at the various offices of the state owned enterprises selected to take part in the study. The respondents chosen to complete the surveys were the ones who were involved in the implementation and active use of the ERP in the State Owned Enterprises in Harare. In as much as instructions on how to respond to the questionnaire were written on the questionnaires, the researcher took the time to explain to subjects and clarified unclear questions. For key respondents that were not available at the time of issuance, the questionnaires were sent via email. 75 questionnaires were distributed and returned. Some of the chosen respondents refused to respond to the questionnaires citing time constraints and others cited fear of victimisation. For subjects fearing victimisation due to disclosure of their responses, the researcher explained to them the ethical considerations guiding the research as well as enlightened the respondents of their rights as research subjects. In cases where someone declined to participate in the study, other respondents within the same organization who met the sampling criteria outlined above were approached.

3.10.3 Interviews

Interviews were used in the collection of primary data from ERP specialists. The interviews were conducted after a review of the responses to the questionnaires. This allowed the researcher to probe further on areas of interest. The interviews were used to collect data on the opinions and knowledge on ERPs of research subjects and gain insights into relevant areas that the researcher had not looked at. A semi-structured approach was used in conducting the interviews to ensure that the interviewer got detailed and in-depth information they wanted but to also keep the conversation flowing in order to gather additional information. Interviews were conducted in private with just the interviewee and the interviewer to ensure confidentiality and privacy. The interviewees were informed of their rights and assured of confidentiality of their responses. The proceedings of the interviews were transcribed and notes were taken.

3.10.4 Secondary Data

The Business Directory defines secondary data as “data that was collected by someone else or for a purpose other than the current one”. The use of secondary data in modern research is widely acceptable practice. “In a time where vast amounts of data are being collected and archived by

researchers all over the world, the practicality of utilising existing data for research is becoming more prevalent" (Smith 2011, p.36). The advantages of secondary data is that it is easy, less costly to obtain and particularly useful where not much time is available for field research. However, when using data gathered from other sources , one needs to be prudent in assessing the applicability of the data. "It is mandatory for the secondary analyst researcher to obtain all documentation of the processes and protocols followed by the primary researchers, including the questionnaire, all coding materials, and any publications that are related to the data" (Stewart & Kamins, 1993). It is also necessary to take note of when the data was collected to ensure that it is still relevant. Quite a lot of empirical studies have been conducted in the area of ERP implementation across the globe and in Africa. Secondary data from previous researches was analysed and complemented primary data in formulating a strategy for ERP adoption in Zimbabwe.

3.11 Data Quality

Data quality is defined by Wikipedia (2019) as "the condition of a set of values of qualitative or quantitative variables". Due diligence has to be taken when collecting data as "any research can be affected by different kinds of factors which, while extraneous to the concerns of the research, can invalidate the findings" (Seliger & Shohamy, 1989).

3.11.1 Reliability of Data

Reliability refers to "the degree to which other researchers performing similar observations in the field, as well as analysis, would produce similar predictions and results. In qualitative research designs reliability is concerned with the trustworthiness and dependability of the data generated" (Thyer 2010, p.11). Polit and Hungler (1993) define reliability as "the degree of consistency with which an instrument measures the attribute it is designed to measure" (p.711). Data is deemed as reliable if a researcher's approach is "constant across different researchers and different projects" (Twycross and Shields 2004, p.11). In this research, to ensure reliability the researcher did not employ other researchers or data collectors but administered the questionnaires and interviews themselves and was consistent in their approach. Reliability can be affected by data collector

bias. To curb against this, the researcher was the only person who administered interviews and questionnaires and their approach to all research subjects was uniform.

3.11.2 Validity of Data

Creswell (1998) refers to validity as "the issue of whether or not an indicator that is designed towards measuring a certain concept actually measures it" (p.247). Content validity is the "extent to which an instrument represents the factors under study" (Li 2006, p.9) .In order to ensure content validity, during the design of the research instruments, reference was made to the research objectives and the literature review in order to ensure that the questionnaires and interview questions adequately answered the research questions and filled some knowledge gaps. Pretesting of the research instruments was also done in order ensure validity of research data. The pretesting procedure that was taken is described in detail in the following sub-section.

Burns and Grove (1993, p.270) refer to external validity as "the extent to which study findings can be generalised beyond the sample used". The sample size was 87.5% of the entire population therefore generalisation of the findings to the entire population is justifiable.

3.11.3 Pretesting the Questionnaire and Interview Questions

"When a questionnaire is used as a data gathering instrument, it is necessary to determine whether questions and directions are clear to subjects and whether they understand what is required from them" (Polit & Hungler, 1995, p.711). Pretesting helps in improving reliability and validity of collected data. The researcher pre-tested the questionnaire on six respondents, 3 were ERP end users and the other 3 were ERP/IT specialists. These respondents were not a part of the sample but were just used to test the effectiveness of the research instrument. Following the pre-test, corrections were done on questions that seemed a bit vague, additional questions added and others that were somewhat a repetition were removed.

3.12 Ethical Considerations

Ethics are "a moral philosophy or code of moral practised by a person or group of people". Research is a scientific activity which is governed by certain ethical standards. "Research ethics

is important in our daily research endeavours and requires that researchers should protect the dignity of their subjects and publish well the information that is researched" (Fouka & Mantzorou, 2011). The main ethical concerns in research are informed consent, anonymity, confidentiality and scientific honesty these concerns are discussed in length in the following subsections.

3.12.1 Informed Consent

Informed consent is defined as "the prospective subject's agreement to participate voluntarily in a study, which is reached after assimilation of essential information about the study" (Burns & Grove, 1993).

Consent for organisations to take part in the study was sought at management level and at individual level. The subjects were informed of the purpose of the study and how information they give would be handled.

3.12.2 Anonymity and Confidentiality

Anonymity and confidentiality were adhered to during data collection. "Anonymity is when subjects cannot be linked, even by the researcher, with his or her individual responses" (Burns & Grove, 1993). Respondents were asked not to record their names on the scripts so as to protect them. Anonymity was also preserved during interviews; responses were not recorded against any individuals. In order to uphold confidentiality, collected data was kept securely and when reporting on findings, identities of people and organizations were not disclosed.

3.12.3 Scientific honesty

In order for the findings and conclusions drawn from study to be a true reflection of aspects under study, scientific honesty is required. "Ethical standards prevent against the fabrication or falsifying of data and therefore, promote the pursuit of knowledge and truth which is the primary goal of research" (Sclafani, 2018). According to Brink (1996), dishonesty involves the "manipulation of design and methods, and retention or manipulation of data". The researcher did not manipulate findings in any way therefore the results that were obtained are valid.

3.13 Limitations

Limitations represent factors such as defects and conditions that are beyond the control of the researcher as highlighted by Silverman (2016). A limitation in this study was the availability of respondents. The selected sample constituted of employees of various organisations who have to attend to their work and getting hold of them for the purposes of conducting the interviews was difficult at times, for those that were available, at times the interview process had to be rushed so that the subjects could attend to their duties.

3.14 Data Analysis

The next step after collection is organising and analysing the data. “Data analysis is involving the process of reducing a large sample of gathered data in order to understand that data” Kawulich (2004). Merriam (1988) is of the opinion that “data collection and data analysis must be a simultaneous process in qualitative research” (p.23). Qualitative data cannot easily be reduced to numeric values; for it to be synthesised, the collected data from questionnaires and interview transcripts were coded.

3.14.1 Data Coding

Data coding is the first step towards analysing data. Data obtained from surveys, observations and interviews is raw and has to be processed for easier analysis. “Coding is the process of analysing qualitative text data by taking them apart to see what they yield before putting the data back together in a meaningful way”(Creswell, 2015, p.156). Coding is also described as the indexing and analysing data in relation to a researchers research questions (Elliott, 2018) .Codes assist in the quantification of data. Data coding is used to draw meaning to data that is provided by respondents. In evaluating the data, the researcher assigns values to the codes. Data coding helps to eliminate excessive and erroneous data and summarises data making it easy to analyse. Care has to be taken to ensure that the meaning of data is not lost during coding by developing some codes prior to the analysis of responses then thoroughly examining all responses and picking out other key issues revealed in the responses and assigning appropriate codes.

3.14.2 Data Organisation and Presentation

It is difficult to analyse data that is not well organised. Proper data organisation leads to a better analysis therefore better and credible results. Data was presented in tabular form, graphs charts and pie charts.

3.14.3 Data Analysis Tools

SPSS version 20 was used in statistical calculations and plotting of graphs and pie charts.

3.14.4 Content and Context Analysis

Content Analysis is used to "examine words or phrases from a number of sources such as literature, interviews and questionnaires" (Palmquist, 2013). Duriau, Regerand & Pfarrer (2007) refer to content analysis as "a class of research methods at the intersection of the qualitative and quantitative traditions" (p.5). In content analysis, "the most frequent phrases and words, and those with similar meanings are grouped together and used as the basis of analysis" (Weber, 2010).

"Thematic analysis is "a method for identifying, analysing and reporting patterns within data" (Braun & Clarke 2006, p.79). Boyatzis (2008) also defines thematic analysis as a process of "encoding qualitative information". The coded data is then organised according to themes. Thematic analysis allows one to zoom in from the general to establishing themes and patterns in the data. This study made use of thematic analysis to analyse data. Following the completion of the questionnaires and interviews, the researcher transcribed the interviews then went through all the transcripts and assigned some answers to pre-defined codes and also developed new codes as they went through the responses. Questionnaires were evaluated in batches, each batch consisting of responses from the same organisation. The codes were then analysed and collated into themes.

3.15 Conclusion

The chapter described the research methods applied in the research and justified the choice of the selected methods. Taking into consideration the nature of the research, a qualitative approach was taken. From a target population of 25 companies, 15 companies were selected as the sample. The next chapter presents the data collected and the analysis.

CHAPTER 4: DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents and analyses the data collected using the research methodology outlined in the previous chapter. The research instruments employed for data collection are questionnaires, interviews and secondary data in SAP ERP system implementation projects' documents drawn from companies involved in this study. Quantitative data was analysed using Statistical Package for the Social Scientist (SPPS) and Microsoft Excel 2010. The generated quantitative was statistically presented graphically using table, pie charts and bar graphs. Qualitative data which also constituted a significant part of the collected data was analysed using the deductive thematic analysis approach. In that vein the grand themes of the thematic analysis approach were deduced from the research objectives. Sub-themes and basic codes falling under the deducted grand themes were allowed to emerge from the collected qualitative data. In addition, the qualitative data was used as corroborating evidence to the quantitative analysis results. In that vein, verbatim quotes extracted from the research key informants were used as the corroborating evidence. The researcher also linked the collected empirical findings to findings in past studies.

4.2 Presentation and Analysis of Demographic Data

This part entails analysis of the response rate data and demographic distribution of the respondents. It covers the gender, experience and organisation category of the surveyed subjects. Tavakol & Dennick (2011) highlighted that preliminary analysis provides some insight into some methodological and study setting variance that may underly observable changes on the main data analysis. Both the question and interview completion rates were analysed.

4.2.1 Questionnaire Completion Rate

Questionnaire response rate refers to the number of questionnaires successfully completed and returned by the research respondents in comparison to the targeted sample size. The completion rate is calculated as follows: **Response Rate= [(Responses Returned) / (Surveys Sent Out)] * 100.** The questionnaire response rate results are summarised below.

Table 4.1 Questionnaire Response Rate

Item	Number
Number of Questionnaires Distributed	75
Number of Questionnaires Returned	66
Response Rate Calculation	66/75 * 100
Response Rate (%)	88%

Table 4.1 above shows that out of 75 questionnaires that were distributed for data collection, 66 were successfully completed and returned to the researcher. This translated to a response rate of 88%. The response rate was generally high enough to ensure a credible data analysis and reliability of the research findings. The high response rate was attributed to regular and vigorous follow ups and constant reminders through telephone voice calls, instant messaging and emails.

4.2.2 Interview response rate

The researcher scheduled 12 key informant interviews with SAP ERP consultants and ICT Project Managers in the State Owned Enterprises (SOEs) that have implemented the SAP ERP system. Table 4.2 below shows the response rate of the interviews.

Table 4.2 Interview Response Rate

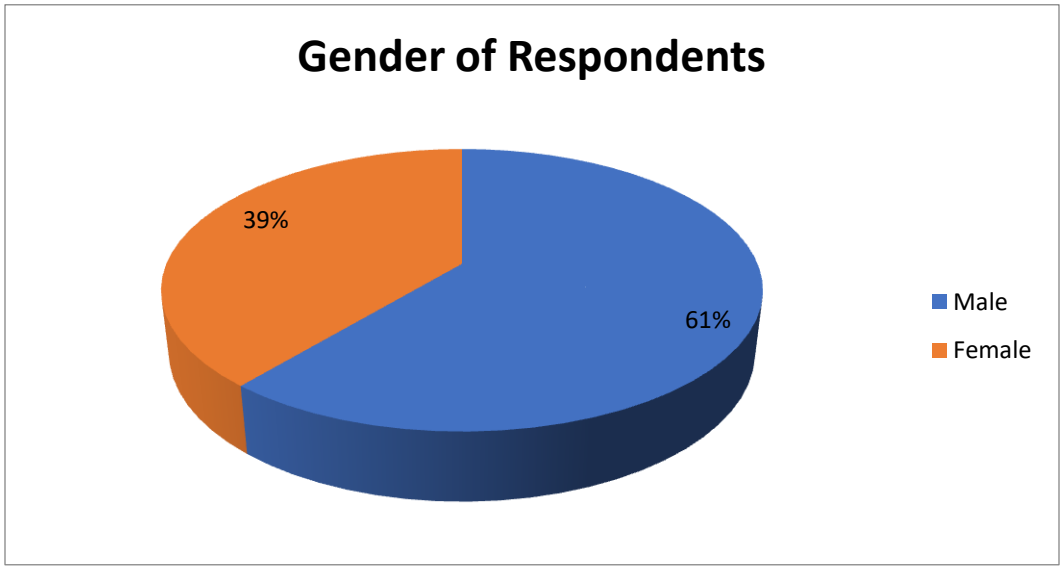
Number of scheduled interviews	12
Number of interviews successfully conducted	9
Interview response rate	75 %

Of the 12 scheduled interviews, the interviewer managed to successfully conduct 9 interviews. The other three (3) of the targeted interviewees were unavailable at the scheduled interview time and even later. The interview response rate then then translated to 75%. The response rate was also high enough to ensure validity of findings.

4.2.3 Gender Distribution

Among the demographic profiles of the research respondents, gender of the respondents was one of the aspects that was analysed. The results are presented in Table 4.3 below

Figure 4.1 Gender Distribution of Respondents



Source: Primary Data

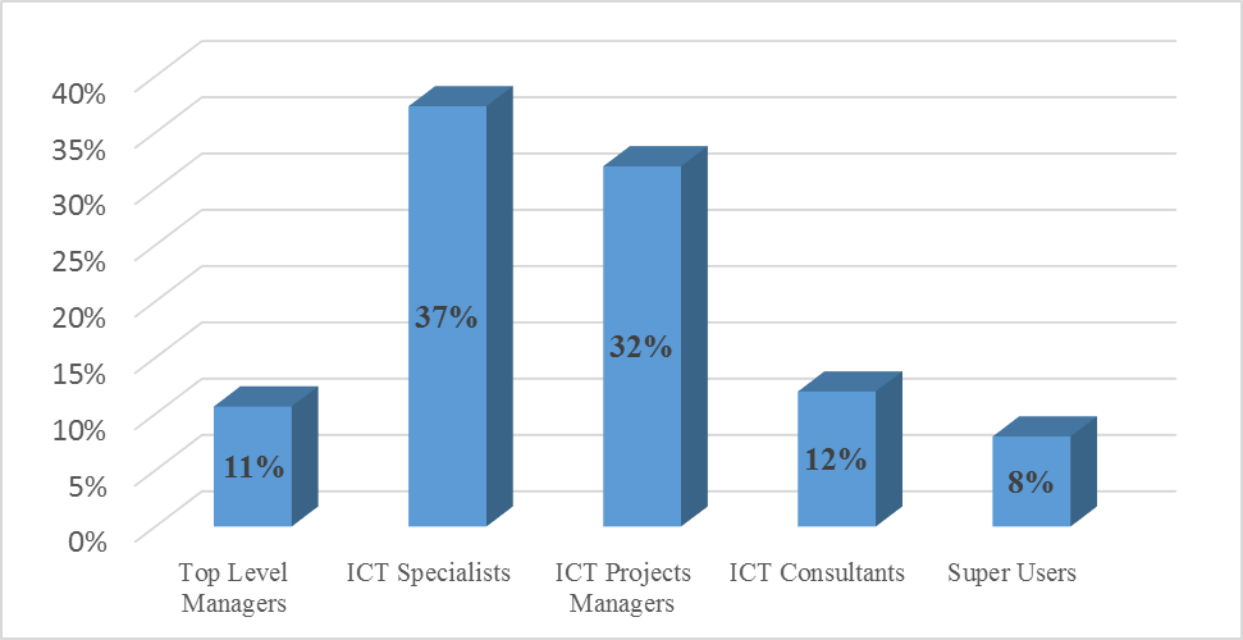
The statistical results above show that 39% of the sample population were females while 61% were males thus signifying that the ICT and Technology sector in Zimbabwe is dominated by males compared to female. However, it is interesting to note that views of both females and males were represented in the collected data.

4.2.4 Distribution of respondents by category

Results pertaining to the distribution of the study respondents by category are depicted in Figure 4.2 below.

Figure 4.2 Distribution of respondents by category

N=75



Source: Primary Data

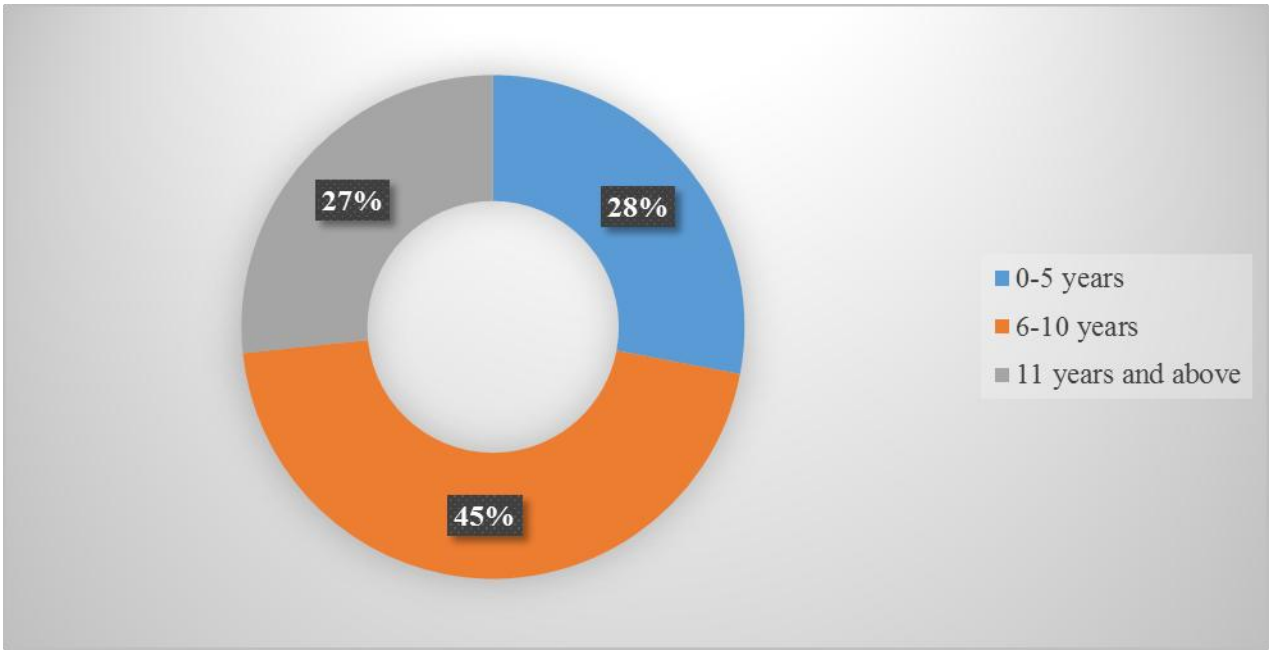
Figure 4.2 above indicates that the respondents who participated in the primary data collection exercise were top-level managers, ICT specialists, ICT Projects managers, ICT consultants and SAP ERP system super users. According to the summarised results, majority of the respondents were ICT specialists in the State Owned enterprises (SOEs) using SAP ERP System (37%), 32% were ICT projects managers in SOEs using SAP ERP System, 12% were ICT consultants drawn from SAP implementing companies, 11% were top-level managers and 8% were super users in SOEs using SAP. Majority of the respondents which were ICT technical employees (ICT specialists, ICT projects managers and ICT consultants) constituted the greater part of the respondents since it was the researcher's plan to collect data from ICT experts who are directly involved in the SAP implementation projects. These are the people who directly understand the challenges and critical success factors for SAP implementation as well as recommendation of the best strategies thereafter.

4.2.5 Number of years involved in SAP ERP system implementation projects

The other demographic profile analysed by the researcher was the experience of the respondents in terms of the number of years they were involved in ERP system implementation projects. The results are presented in Figure 4.3 below.

Figure 4.3 Number of years involved in SAP ERP system implementation projects

N= 75



Source: Primary Data

Results in figure 4.3 above indicates that 28% had 0-5 years working experience with SAP implementation projects, 45% had 6-10 years and 27% had at least 1l years of SAP implementation experience. Interestingly, majority of the respondents (72%) had at least 6 years working experience in SAP implementation projects. This aided to obtaining credible data from a bigger number of respondents who were highly knowledgeable about SAP implementations. This then aided to the credibility of the collected data as well as the reach findings.

4.3 Strategies currently used for implementing SAP in SOEs in Zimbabwe

One of the objectives of this study entailed establishment of the strategies that are correctly being used for the implementation of SAP systems in SOEs in Zimbabwe. The researcher used a

measure of central tendency (mean) and measure of scatter (standard deviation). The results are summarised in Table 4.4 below.

The calculated values of the mean were interpreted guided by the following key (Table 4.3):

Table 4.3 Verbal Interpretation of the calculated mean N=66

Calculated Mean	**Interpreted as (rounded to the nearest whole number)**	**Liker Scale value narration (Verbal Interpretation)**
0-1.49	1	Strongly Disagree
150-2.49	2	Disagree
2.50-3.49	3	Neutral
3.50-4.49	4	Agree
4.50-5	5	Strongly Agree

Table 4.3 above shows how the mean was interpreted in relation to the used Likert Scale. The computed mean and standard deviation results based on the collected quantitative data are summarised in Table 4.4 below.

Table 4.4 Strategies currently used for implementing SAP

Serial	**Feature**	**Metric**

		Mean	Standard Deviation
1	Project inception\kick-off meeting involving internal and external stakeholder	3.85	0.399
2	Project implementation progress assessments	3.37	0.741
3	Project implementation documentation	3.42	0.620
4	Project implementation methodology application	3.44	0.934
5	Project scheduling techniques	3.67	0.816
6	Training and development of users	3.66	0.782
7	Integration and collaboration of modules	4.01	0.533
8	Maintenance and Support	2.39	0.617

Source: Researcher's statistical computations based on primary data

Results in table 4.4 indicates that the mean = 3.85 (SD = .399) showing that on average, SOEs were convening SAP implementation projects' initiation meetings. The standard deviation (0.399) is less than 1 unit meaning that there was less variability in the responses extracted from the respondents. According to the results, these meetings would involve both SOEs' internal staff and external stakeholders such as the SAP vendors or consultants. These results were consistent with a verbatim quote extracted from Key formant 1 who said:

> *It is enviable to hold a project initiation meeting especially involving big projects like SAP ERP implementations. In our company the first stage involved is holding a formal meeting encompassing the SAP implementing company,with representatives from all the functional areas of our company (including Marketing and public relations, procumbent, administration, Human Resources Management, ICT department, Operations, Accounts and Finance among other key departments).*

The qualitative data provided through interviews also indicated that it is through the project initiation component that the initial system implementation documents are requested (documents such project plan and project charter).

In relation to SAP projects implementation documentation, the generated mean score 3.42 (SD=0.620) indicates a lukewarm response on following documentation procedures in SAP

implementation. Based on the collected empirical evidence a number of documents in Sap implementation are generated. These include project management plans, change management plans, project charter, project contract, project schedule, configuration guides and training manuals among other key documents. This trend was further probed and Key informant said the following:

> *Proper and complete documentation procedures are usually followed when the projects are starting but along the way and towards the end of the projects, projects documents are mostly not complete. Usually, users are seen complaining about missing tailor-made SAP training manuals and business blueprint document (a copy of the features of the entire SAP system to be implemented including configurations, user requirements, and functionalities). SAP consultants have a tendency of starting very well on documents especially contractual documents but along the way they do not deliver on documents user training manuals*

It also emerged from the collected empirical evidence that the strategic plan for SAP implementation also include project implementation methodology application and project progress assessments. The responses indicated mean scores of 3.44 (SD = 0.934) and 3.37 (SD = 0.741 for project implementation methodology application and project progress assessments. These results also showed indifferent responses on proper application of project implementation methodology and project progress assessments. In-line with these results, interview findings indicates that SAP implementing consultants are concentrating more on other phases rather than having a smooth and religious flow of the system development cycle. The results indicated that the consultants are rushing to system development aspects at the expense of the earlier stages of systems analysis and systems design. In most cases, this ends up causing problems of scope creep (uncontrolled scope of activities) and system development's mis-alignment vis-à-vis user requirements.

The results also indicated that SA implementation projects were dismally failing on the aspects of post-system implementation support and maintenance. This was highlighted by the low mean score of 2.39 (SD=0.617) meaning that the respondents were disagreeing that the Sap implementing consultant were properly handling systems support and maintenance. This trend was also explained through an interview where the key informant 12 said:

SAP implementing companies have been hit by brain drain as SAP specialist are leaving the country for greener pastures. This has heavily affected us as SAP clients on the aspect of getting quality technical support and maintenance services from the SAP vendors or consultants. Sometimes we get SAP consultants who are still learning the business and technical processes of the SAP system.

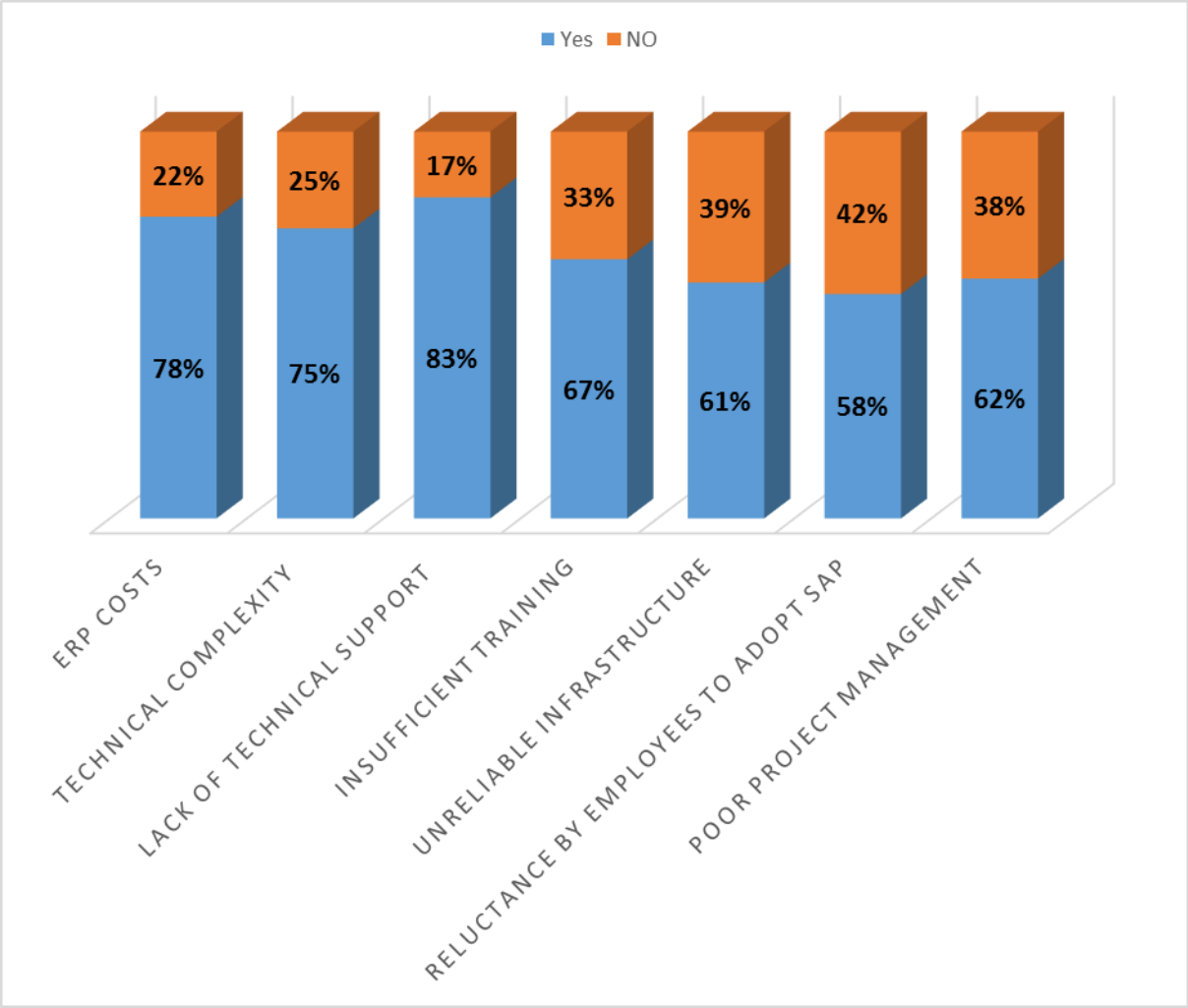
On training of users, the mean score 3.66 (0.782) is an indication that the respondents agreed that the SAP users in the SOEs are trained on use of the SAP system. Results indicated that as part of SAP implementation, it is usually the norm that users must be trained on how to use the system and that also enhances user acceptance of the system. It also emerged from the interviews that usually effort on training of SAP users is mostly carried out those days when the system is being implemented. However, lack of continuous development of users for full utilisation of the SAP system in post SAP implementation era is mostly lacking. It was actually observed that SAP users are using a small number of the system functionalities due to lack of adequate user trainings.

4.3.1 Factors which are currently affecting effective implementation of the SAP ERP systems.

The other objective that the researcher attempted to address involved factors contributing towards ERP implementation failure in SOEs in Zimbabwe. The results are summarised in Figure 4.4. below.

Figure 4.4 Factors contributing towards ERP implementation failure in SOEs in Zimbabwe.

N=66



Source Primary data

The challenges raised include ERP costs, technical complexity of ERP implementation, lack of technical support, insufficient training of SAP end users, ICT infrastructural challenges, reluctance by employees to adopt SAP and poor project management in SAP ERP system implementation.

The summary of responses shown in Fig 4.4 demonstrates that the costs involved in ERP system implementation were on the high side which is also confirmed by the summarised results. Fig 4.4

also illustrates that 78% responses pointed out that ERP system costs are high. The high ERP costs had an implication of implementing an ERP system that is not fully integrated and supported in terms of full implementation of most of the SAP modules required by most of the SOEs. Full ERP system implementation should encompass training of all system users which was shown to be lacking in Fig 4.4 where 67% of users that indicated that there is always insufficient training in-line with SAP system implementation. Continuous training and development of SAP users translates into additional ERP costs which organisations would always be trying to avoid. ERP implementation costs comprises hardware costs, software costs, business re-engineering expenses, data integration costs, user training development. This is consistent to Shah (2009) who echoed that ERP costs are high, the management unavoidably opts for lower implementation techniques which might be unfavourable to the full implementation of SAP as well as optimal performance of the application.

Generally, the partcipants indicated that the IT technical support was not good enough to entrench effective SAP system implementation especially on the background that it is a huge system which cannot be implemented overnight. Actually 83% of the repondents indicated that their organisations (SOEs) are lacking the technical support services they require from the SAP vendors or consultants. It emerged from the interviews that experienced SAP consultants are leaving the country for greener pastures thus leaving techinical support gap. As highlighted by Upadhyay et al. (2009) who undertook a study in India showed that satisfactory vendor support is imperative in the successful implementation and usage of ERP system in organisations.

In terms of ICT infrastructure, the research findings indicates that 61% of the respondents were having issues with the underlying ICT infrastructure on which the SAP system should be running. The issue of infrastructure was mainly raised especially on areas of integrating organisational activities taking place across physically separated business units or branches or offices. The raised ICT network issues were connected to internet connections and power issues. High bandwidth costs, internet and network downtimes and erratic power supplies were raised as some of the ICT infrastructural concerns. Findings from their research Jakovljevic and Simpande, (2003) indicated that the infrastructure of an organization in relation to

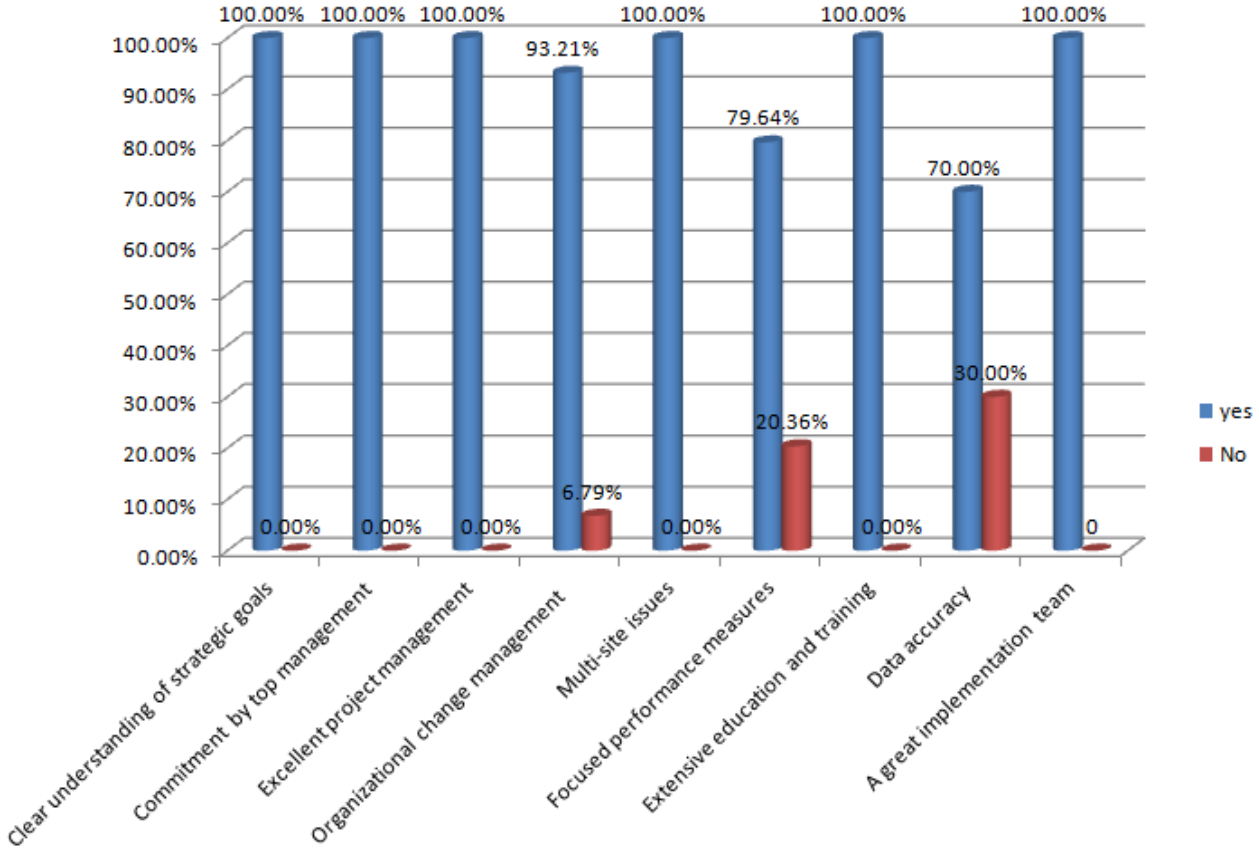
communications networks and databases should function at optimum level in order to enable system stability.

Other highlighted factors that adversely affect SAP implementation success based on the obtained results pointed to technical complexity involved in SAP system implementation (75%), reluctance by employees to adopt new SAP system (58%) and poor project management (62%). Through the interview findings poor project management was reflected through uncompleted SAP projects, failure to meet project implementation time and scope, project budget overruns, unfinished user training manuals and lack of adequate technical support services in the post SAP system implementation era.

4.4 Critical Success Factors for successful SAP ERP Implementation in SOEs in Zimbabwe.

The graph below illustrates the factors that can be adopted to successfully implement ERP systems in SOEs in Zimbabwe:

Figure 4.5 SAP ERP system implementation critical success factors



Source: Primary Data

4.4.1 Clear understanding of strategic goals

One hundred (100%) of the respondents were of the view that a clear understanding of organisational goals is critical in successful ERP implementation. There is a need to understand why an ERP is being implemented. SAP experts feel that at times organisations feel the need to adopt this technology as other big companies are using them without analysing what they want to achieve through the adoption of an ERP. The SAP specialist revealed that at times organisations do not even need to implement an ERP but simply need to re-engineer their business processes in order to reap the same benefits that can be derived from an ERP solution without the huge financial investment.

4.4.2 Commitment by top management

The general consensus among SAP experts from the interviews show that projects lacking support from top management are bound to fail. Mid-level manager usually propose the adoption of ERP systems but in order to successfully see the projects through, top management support is required. The adoption of ERP will see changes in business processes and conflicts may arise which need top management to resolve.

Implementation of ERP is a huge undertaking that requires commitment to allocate appropriate resources which could be financial, human or otherwise in order to see the project through to completion. These resources can only be availed if top management is in full support of the project.

4.4.3 Excellent project management

Due to the complexity of the nature of ERP systems, the project team must be headed by a qualified and experienced project manager. Good project management may be the difference between a successful and failed implementation. 100% of the respondents deem project management to be critical for success. Sap experts interviewed are of the opinion that ERP project management is more than providing oversight on budgetary issues, managing timelines and resources but the project manager should also manage the SAP consultants and this requires knowledge of SAP ERP systems.

4.4.4 Organizational Change management

Change management is a critical success factor in ERP implementation. The interviews revealed that participation of employees throughout the project lifecycle helps to manage change and get buy in from the employees. When SAP Experts were interviewed they believed that effective communication is required for a smooth changeover. According to them, communication helps the project teams understand the challenges and sources of resistance by the employees and address them at an early age to facilitate acceptance of the system by employees .The survey reported that 93.7% of respondents feel that managing change is crucial.

4.4.5 Multi-site issues

Multi-site ERP implementation require standardisation among different remote sites in order to ensure consistency and accuracy of data cross all sites. Experts advise on a needs analysis of every site and doing customisations tailored for a particular site then carrying out a multi phased roll out.

4.4.6 Extensive Education and training

The adoption of an ERP system presents a huge change for employees regarding the manner in which they do their work. If employees do not know how to use it, this may render the systems ineffective and employees may resort to reverting back to the old system. Training of staff will help employees adjust to the new system and be productive quicker. This will help employees and the organization at large to reap maximum benefits from the system. The research revealed that training is a key component in change management. 88% of the respondents feel that training is necessary for a successful ERP implementation.

4.4.7 Data accuracy

When moving data from old Information systems or entering data during configuration, it is imperative that this data is accurate. In as much as there are built in functionalities in the ERP modules to manage data accuracy, the system may not detect some erroneous data if it is of the correct data type. ERP systems sync data across multiple databases which are accessible to organisation wide. Erroneous data will result in system malfunctions and incorrect data processing which may be difficult to correct. Inaccurate data being fed into the system may render product scheduling, inventory management and accounting unreliable which is a failure in implementation. 30% of respondents did not think that data accuracy may lead to implementation failure but the experts believe that this is crucial but commonly overlooked factor.

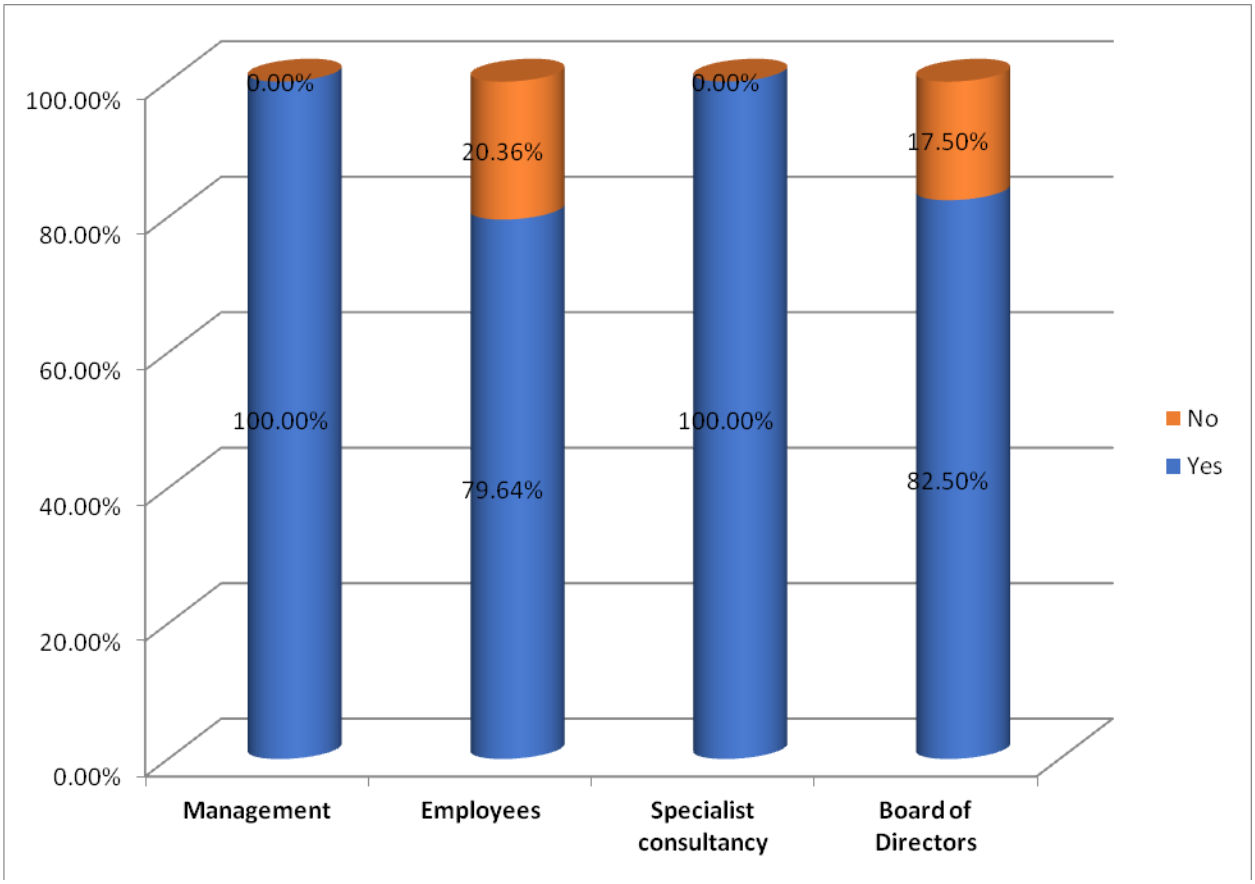
4.4.8 A great implementation team

Interviews of ERP experts revealed that project teamwork is crucial throughout the entire ERP implementation process. Each player has to play their part well and work well with others.

4.6 Key Stakeholders

Stakeholder involvement is deemed as a critical success factor in ERP implementation. Below shows the opinions of respondents as to which stakeholders should be involved.

Figure 4.6 Key Stakeholders



Source: Primary data

All survey respondents are of the opinion that an organisations management should be involved in ERP implementation. Of the 66 respondents who actually responded to the questionnaires,

79.64% of respondents indicated that employees are key stakeholders in ERP implementation projects. In order to ensure success, all 75 respondents feel that there is a need for SAP ERP specialist consultants. Eighty three (83%) of respondents were of the opinion that the board of directors are key stakeholders. By and large, it emerged that a set of key holders including management of the SOEs, internal employees, SAP consultants and board of directors are required in the successful implementation of SAP ERP. Based on the interview findings, the buy-in of the top management and board of directors is key in ensuring that the SAP system implementation projects are adequately funded. Actually, it is the role of the top management with endorsement of the board to allow the SAP project to run and to be implemented in their organisations. Winning the users of the system from the onset where the SAP system is to be brought into the organisation is critical. It is the users of the system who drives the overall use of the implemented SAP system.

4.7 Strategy for Successful SAP ERP Implementation in SOEs in Zimbabwe

An ERP implementation strategy is "how an organisation goes about planning and directing the deployment of an ERP application. Implementation strategies address mapping the company's business processes to a system in an organized and defined manner" (Dunaway, 2004, p.2).

From analysis of the findings, it is recommended that when SOEs decide to adopt an ERP, they should do their due diligence on assessing their business requirements. SOEs need to first define the objectives of implementing an ERP and provide measures or performance indicators to evaluate whether the objectives are being met. The second step would be to conduct a cost benefit analysis. From the study, it has been shown that at times organisations do not really need to implement an ERP system but to simply re-engineer its business processes in-order to be more efficient in and effective. The cost of implementing a SAP ERP solution is quite high especially for SOEs therefore the cost of implementation should really be worth it. The next step would be to carry out business process re-engineering (BPR) and this should be done in consultation with all departments. End users input should also be gained because at the end of the project, they are the ones who have to use the system therefore the system should be designed with usability in mind. BPR should be carried out simultaneously with change management planning. Following

this, organisations should then evaluate different ERP vendors and choose ones that is a good fit for the organisation. Even though most SOEs run on SAP, it may not always be compatible.

After selecting a system meets business requirements, SOEs then need to engage the vendor or implementation partner. In Zimbabwe, Twenty Third Century Systems is the accredited SAP ERP installer. The project team then has to be formed which includes employees of the SOE. The persons chosen to manage the project should be skilled in project management practices. It is also the duty of the project team to keep all stakeholders in the know from inception stage. As evidenced in the study, involving stake holders in the project implementation helps in gaining their buy in which is a factor that may determine the success or failure of the implementation.

It is imperative that there is flexibility in the management of the project in order to facilitate the adoption of changes during implementation. If it realised that a particular goal needs realignment or there is a need for changes in the configuration of the system, it is better for adjustments to be done during implementation than at the end of the project. There is therefore a need to be continually verifying and validating the implementation.

It is advised that ERP systems be rolled out in a phased approach especially in cases of multi-site implementations. It allows the implementation teams to focus and do justice to one implementation at a time. Should there be challenges in the configurations, at least these will be contained in one site which makes trouble shooting easier therefore a phased rollout allows for thorough testing.

Themes generated in the formulation of the ERP Implementation Strategy

The thematic analysis approach was applied to allow generation of themes from the collected qualitative data. The thematic analysis approach involved generation of basic codes / themes, sub themes and grand themes. In line with formulation of the strategy the thematic map is shown in table 5.1

Figure 5.1: Strategy for the successful implementation of an ERP system

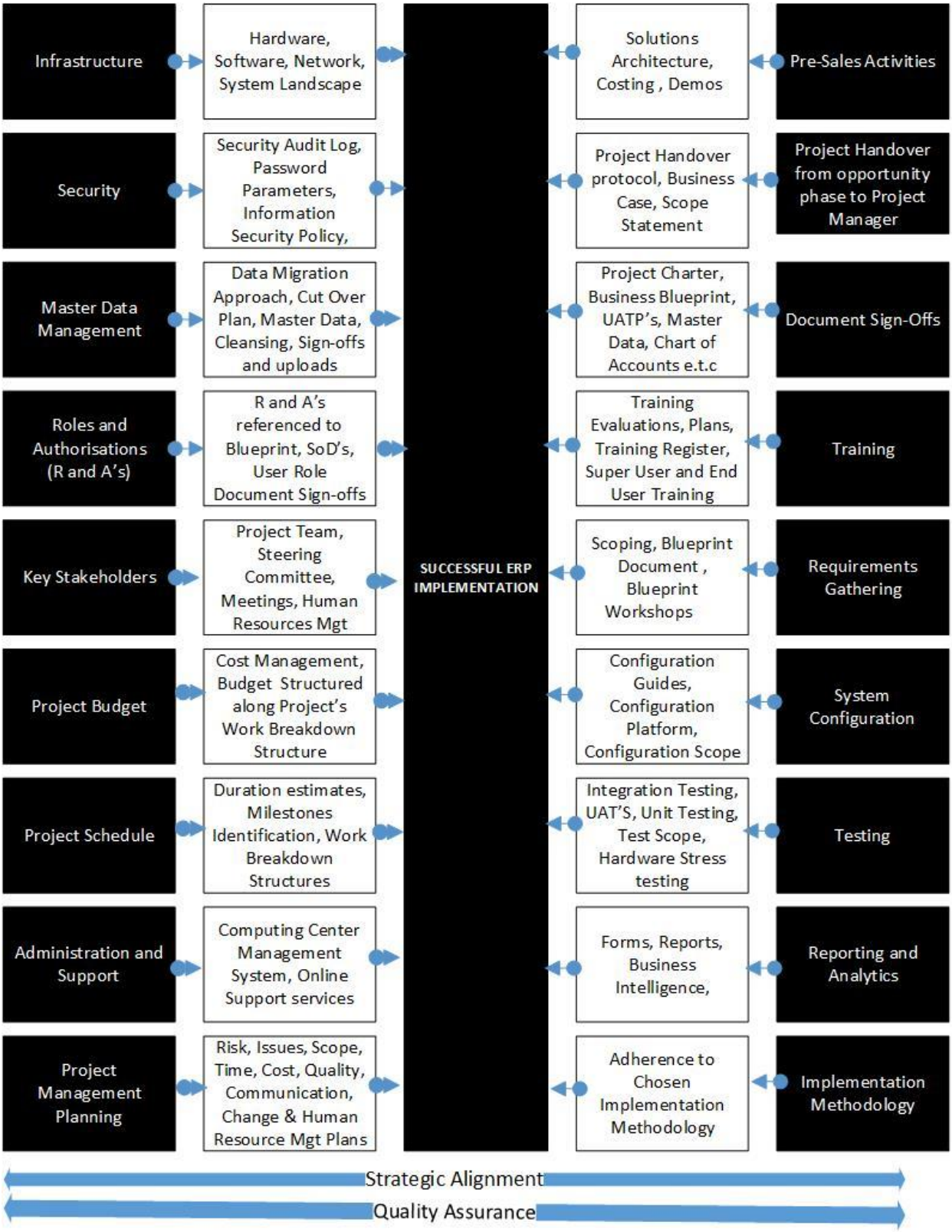


Table 5.1 ERP Implementation Strategy Formulation Thematic Map

Main Theme	Sub Theme	Basic Theme
Project Hand-Over	Project Handover Protocol	- Signed Contracts from opportunity phase such as the End User License Agreement, Statement of Work and Third Party Statement of Work handed over to Project manager for project commencement - Internal Delivery Management documents like Final Project Calculation, Risk Assessment Results and Effort Estimation handed over to project manager
	Business Case	- Projects' objectives support business and technology strategies of the organisations - Proposed solution aligned with projects' objectives described
	Scope Statement	- Stakeholders approval of the Scope in the Opportunity phase - Scope , deliverables and implementation strategy documented in the opportunity phase
Document Sign-Offs	Project Charter	- Document signoffs to signify correctness, completeness and authority to progress to the next stage of the implementation
	Business Blueprint	
	Acceptance Test Procedures	
	Master Data	
	Phase Closures	
	Project Management Plans	
	Chart of Accounts	
Pre-Sales Activities	Demos	- Presentations of an outline of the design and functionality of the system to be developed - Processes demonstrated at Demo presentations adopted in Final solution
	Solutions Architecture	- Tenders responded by knowledgeable personnel prescribing the right solutions which address the clients' pain points
	Costing	- Appropriate onsite , offsite days and resource rates on costing document to suit required solution and not tailor made to fit client's budget - Experienced consultants on costing document to suit required solution and not tailor made to fit client's budget
Training	Training Plan	- A plan for the outline of the training process that will guide the trainer in the training program.
	Training Register	- Training records for the trainees that were

		present during training
	Training Evaluations	- Assessments for the effectiveness of the training program
	Super User Training	- Effective training for all the system expert users
	End User Training	- Knowledgeable Super Users to properly train end users - Training for end-users routinely conducted
	Consultants' training	- Regular training for consultants to keep abreast with the changing trends in technology
System Configuration	Configuration Guides	- Referencing to client specified Configuration guides and not to standard Configuration Guides which are not applicable to clients' specifications during system configuration - Client to remain with Configuration guide for support purposes
	Blueprint Reference	- Configuration done with reference to the Blueprint which holds the clients' requirements specifications
	Configuration Environment	- Configuration work done in the Development Environment and tested in the Quality Assurance environment and finally carried to the Live environment for production
	Scope for the Configurations	- Signing of Addendums for additional scope to avoid scope creep
Testing	Integration Testing	- Verification of the interaction of the various modules in the ERP
	Hardware Stress Testing	- Intense and thorough test to determine the stability of the system after its implementation
	User Acceptance Test Procedures	- Signing of all processes by users of the system during Acceptance Test Procedures , unsigned processes realigned to fit user specifications
	Unit Testing	- validation of each unit module for functionality
	Test Scope	- A predefined scope for the testing procedures
	Testing's Integration with Change Control	- Testing processes following the Change Management protocols by testing work in the quality assurance environment that was developed in the development environment.
Infrastructure	Hardware	- Physical Environmental Controls suitable for the location of the servers at the data centers - Hardware sizing process appropriately done
	Software	- Strong Data base Access Controls - Operating System used appropriate for system version - Strong Application Access Controls

		- Use of a platform that manages the lifecycle of the solutions implementation e.g. Solution Manager
	Network	- Strong Network Security controls - Limited business partners permitted to connect to the network - Non- Dialogue Users Connections to the Network's termination even after permitted time has expired - SNC protection applied to RFC calls. - Logging switched on and monitored for Router Connections for remote access
	System Landscape	- Setting up of the system landscape in relation to the prescribed solution - Configuration work flowing in a phased sequential manner across the environments in the system landscape, from the Development Environment to the Quality Assurance Environment and finally to the Production to avoid room for fraudulent activities
Change Management	OCM plan	- Documentation of essential Change Management Initiatives
	OCM Charter	- A formal process to address how the changing needs and capabilities of an organization will be addressed
	Project Change Logs	- A list of changes made during the project
	Change Management Trainings	- Trainings to prepare the users of the system to embrace the changes that comes with the new system
Administration and Support	Computing Center Management System	- A log to keep track of all challenges the system is facing like low memory or hard disk
	OSS	- Use of the Online Support Services
Security	Security Audit Log	- Active logging to monitor all the transactions that take place in the system
	Password Parameters	- Password settings in line with the global best practices standards or with the Information security policy
	Sensitive Transaction Codes	- Locking of sensitive transaction codes in the Live Environment - Users not permitted access to sensitive transition codes in the Live Environment
	User Access	- User Access control for sensitive programs and tables
	Tables and Programs	- Protection for tables and programs from

	security	unauthorised users
	SAP Router	- Monitoring of logs on the router to avoid unauthorized changes to the router's file permissions table
	Information Security Policy	- Rules and boundaries set for the protection of the organisations' information and technology
	Super User ID's	- Default users secured properly by changing the standard passwords for super user id's
Master Data Management	Master Data Cleansing	- Verification and Validation of master data for consistency and accuracy
	Master Data Sign Offs	- User approvals for master data consistency and accuracy through signatures to allow for master data uploads
	Data Migration Approach	- A formal strategy for the movement of data from a legacy system to a new system
	Cutover Plan	- An executable Plan that communicates to the stakeholders the steps, timing and logistics for the transition to the Go-Live phase.
	Master Data Uploads	- Accuracy, Completeness and Existence of master data insured in the importation of legacy data in batches to the target system - Use of upload programs with low error- rates e.g Legacy System Migration Workbench (LSMW).
Requirements Specification	Blueprint Document	- A well-defined Blueprint document acts as a base for the successful implementation of the ERP system since it provides a detailed description of the company's business processes and system requirements to adapt to the company's needs
	Blueprint Workshops	- A well-defined Blueprint document acts as a base for the successful implementation of the ERP system since it provides a detailed description of the company's business processes and system requirements to adapt to the company's needs
	Scoping	- A detailed scoping exercise before contract design brings out the identification of gaps the new system should address
Roles and Authorisations	User Role Document	- Alignment of the roles in the organizational structure with those in the business processes - Signed Roles and Authorisations
	Roles and Authorisations configurations	- Consistent Role naming - Configuration of approved roles with limited

		authorisations
	Segregation of Duties	- Separation of duties in roles intended to minimize errors and fraud
Project Management Planning	Risk, Issues, Scope, Time, Cost, Quality, Communication, Change & Human Resource Management Plans	- The procedures for handling / management of respective project areas during the project are defined and signed
Project Schedule	Duration estimates, Milestones Identification, Work Breakdown Structures	- Frequent Updates of the project's milestones , activities and deliverables
Project Budget	Cost Management, Budget Structured along Project's Work Breakdown Structure	- A realistic allocation of authorised financial resources over a specific period of time for a particular scope to avoid budget overruns
Key Stakeholders	Project Team Composition	- Project team consists of members stated in the Project Charter
	Steering Committee	- Top Management Support crucial - Steering Committee composition in line with Project Charter
	Meetings	- Regular project team meetings with progress updates - Regular Steering Committee meetings with highlights on key risks , issues and progress
Reporting and Analytics	Forms, Reports, Business Intelligence..	- Development of reports specified during requirements gathering for use by management during decision making
Implementation Methodology	Adherence to the phased approach of the Implementation Methodology	- An output from the previous phase should be an input for the next phase

One of the major themes that emerged from the collected data in the development of the ERP Implementation Strategy was the Project Handover. This entails the Project Handover Protocol which houses signing of project contracts during the pre-project phase. This process includes elements such as the End User License Agreement, Statement of Work and Third Party Statement of Work handed over to Project manager for project commencement, Internal Delivery Management documents such as Final Project Calculation, Risk Assessment Results and Effort Estimation handed over to project manager. This protocol is handy in ensuring that the initial project documentation that will be valid for the whole project lifecycle is handed over to the

Project Manager. In addition the Business Case Documentation should also be handed over to the project team since it entails projects' objectives that support business and technology strategies of the organisation as well as ensuring that the proposed solution is aligned with projects' objectives. The highlighted documentation should be supported by the Scope Statement which shows stakeholders approval of the Scope in the opportunity phase and highlights the scope, deliverables and implementation strategy documented in the opportunity phase.

Documentation Sign-Offs are essential for the major project documentation such as the Project Charter, Business Blueprint, Acceptance Test Procedures, Master Data, Phase Closures, Project Management Plans and Chart of Accounts to signify correctness, completeness and authority to progress to the next stage of the implementation .

Pre-Sales Activities are the activities done by the Business Development team before the inception of a project. These include Demos / Proof of Concept which is essential for the Presentation of an outline of the design and functionality of the system to be developed. It is paramount for the processes demonstrated at Demo presentations to be adopted in the final solution. Solutions Architecture is an important strategy for the prescription of the solution-to-be , it involves the responding to tenders from potential clients, these tenders should be responded to by knowledgeable personnel who are able to prescribe the right solutions which address the clients' pain points. Costing is another pre-sales activity which should be done properly by putting appropriate onsite, offsite days and resource rates on costing document to suit required solution and not tailor made to fit client's budget. Experienced consultants should also be put on costing document to suit the required solution and not tailor made to fit the client's budget.

For the training strategy to be effective there should be some supporting strategies that should be implemented. Amongst them is the Training Plan which outlines the training process that will guide the trainer in the training program, Training Register shows the training records for the trainees that were present during training, Training Evaluations assess the effectiveness of the training program. Effective training for the Super users is important so that they will be able to

perform End User training. Regular training for consultants is crucial for them to keep abreast with the changing trends in technology

System Configuration is the development of the system. The use of configuration guides leads the system developers to configure a solution that is within scope. These documents should remain with the client after the implementation for support purposes. Configuration should be done with reference to the Blueprint which holds the clients' requirements specifications. The Configuration work should be done in the right environment which is the Development Environment and tested in the Quality Assurance environment and finally carried to the Live environment for production. Configuration should not be done in the live environment because it destabilises the system processes. The system configuration work should be controlled to avoid scope creep through the signing of Addendums for additional scope.

For the testing strategy to be effective it should be supported by the Integration testing to verify the ability of the various modules to interact in the SAP system. Hardware Stress Testing is paramount for the thorough testing of the hardware to withstand the SAP systems high storage and processing requirements. Signing of all processes by users of the system during Acceptance Test Procedures is crucial, unsigned processes indicate users dissatisfaction and should be realigned to fit user specifications. Validation of each unit module for functionality is important for the efficiency of the SAP system. A predefined scope for the testing procedures is important to avoid an uncontrolled scope. There should be a Testing's Integration with Change Control by Testing processes following the Change Management protocols by testing
work in the quality assurance(Testing) environment that was developed in the development environment. Developed work should never be tested in the Live environment nor should it be tested in the development environment.

Strategies for infrastructure should be supported by strategies in the hardware, software, and network and system landscape. Infrastructure is a key enabler in the implementation of the system. There should be strong database, application and network security controls in place. The system landscape should be set up in relation to the prescribed solution. Consultants should ensure that configuration work flows in a phased sequential manner across the environments in

the system landscape, from the Development Environment to the Quality Assurance/ Testing Environment and finally to the Production/ Live environment to avoid room for fraudulent activities

Change Management activities are crucial for the preparation of the users of the system to embrace the changes that comes with the new system. The Change Management activities are supported by the following strategies: Organisational Change Management Plan (OCM), project change logs, change management trainings and the OCM charter.

For the continued function of the sap system there should be administration and support supported be the Computing Center management system which is a log that keeps track of all challenges the system is facing like low memory or hard disk and the use of the Online Support Services.

Security is crucial for the protection of confidential data from unauthorised access. This is supported by the activation of the Security Audit Log which monitors all the transactions that take place in the system. Password settings should be in line with the global best practices standards or with the Information security policy. Sensitive transaction codes should be locked in the Live Environment to avoid abuse of privileges. Users should not be permitted access to sensitive transition codes in the Live Environment. There should be User Access control for sensitive programs and tables. Monitoring of logs on the router to avoid unauthorized changes to the router's file permissions table is paramount. Rules and boundaries set for the protection of the organisations' information and technology should be included in an Information Security Policy. Default users should be secured properly by changing the standard passwords for super user identification login credentials.

The management of master data is an important strategy. This is done by Master Data Cleansing which verifies and validates master data for consistency and accuracy. User approvals for master data consistency and accuracy through signatures to allow for master data uploads are done through master data sign-offs. The data migration approach which is a formal strategy for the movement of data from a legacy system to a new system is important in the management of

master data. The Cut-Over Plan which is an executable Plan communicates to the stakeholders the steps, timing and logistics for the transition to the Go-Live phase. During master data uploads it is important to ensure accuracy, Completeness and existence of master data. Use of upload programs with low error- rates such as Legacy System Migration Workbench (LSMW) is paramount.

A well-defined Blueprint document acts as a base for the successful implementation of the ERP system since it provides a detailed description of the company's business processes and system requirements to adapt to the company's needs. A well-defined Blueprint document acts as a base for the successful implementation of the ERP system since it provides a detailed description of the company's business processes and system requirements to adapt to the company's needs. A detailed scoping exercise before contract design brings out the identification of gaps the new system should address

The Alignment of the roles in the organizational structure with those in the business processes is crucial. Only signed Roles and Authorisations should be configured. Consistent Role naming, Configuration of approved roles with limited authorisations and Separation of duties in roles is important in Roles and Authorisations.

The procedures for handling / management of respective project areas during the project should be defined and signed in the project management plans such as the Risk, Issues, Scope, Time, Cost, Quality, Communication, Change & Human Resource Management Plans.

Frequent Updates of the project's milestones, activities and deliverables in the Project Schedule is important. A realistic allocation of authorised financial resources over a specific period of time for a particular scope to avoid budget overruns. Development of all reports specified during requirements gathering for use by management during decision making is important.

Adherence to the phased approach of the Implementation Methodology is crucial. An output from the previous phase should be an input for the next phase. The strategy recommends the use of the agile approach in system implementation.

Orgainisation Culture, Quality Assurance and Strategic Alignment are the key enablers that support the successful implementation of the ERP system throughout the project lifecycle.The formulated strategy ensures the successful implementation of ERP systems by offering a holistic solution that is all-inclusive for system implementation. As a result the SOEs would be able to benefit from the usefulness of ERP systems in business organisations by improved decision making, transparency, accountability and efficiency thus improving the performance of the SOEs in Zimbabwe.

4.8 Conclusion

This chapter presented the data collected using interviews and questionnaires. The quantitative data that collected was presented in the form of tables, pie charts and bar graphs. The data was then analysed and the finding were reported. The study focused on the presentation and analysis of the research findings. The findings show that ERP implementations in SOEs in Zimbabwe fall short of expectations. The next and final chapter relates the findings of the research to the research objectives and provide recommendations.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The aim of this study was to develop a strategy for successful SAP ERP Implementation in SOEs in Zimbabwe. The first chapter introduced the research problem and gave the objectives of the study. Chapter 2 which is the literature review analysed literature related to the area of study which helped answer some of the research questions. The third chapter outlined the methodological approach to the study and outlined how the sample was chosen and how data was collected. The previous chapter, chapter 4 presented the data collected. The data was analysed and findings were presented. The findings of the research were used to draw some recommendations as to how to solve the research problem under study. The chapter revisited the research objectives and address them individually. This chapter highlighted areas that need further study.

5.2 Research Objectives Revisited

The main objective of the study was to develop a strategy which can be adopted to facilitate successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe.

The primary research objective was supported by the following subsidiary objectives:

Objective 1: To establish strategies which are currently being used for the implementation of the SAP ERP system in SOEs in Zimbabwe?

The research revealed that there are no defined strategies when SOEs decide to implement ERP systems. Organisations make the decision to employ ERP based on perceived benefits without proper assessment of the business and defining performance indicators for a successful implementation.

Objective 2: To identify the factors contributing towards the current ERP implementation failure in SOEs in Zimbabwe.

The study revealed that in SOEs, top management are not usually heavily involved in the implementation. This results in persons who are most of the times incapable of passing decisions

heading projects. Lack of a defined change management plan makes the transition from legacy systems to SAP ERP difficult which at times results in users getting frustrated and abandoning the system. The low productivity seen in the early months post implementation have been attributed to lack of training lack of adequate training in some cases results in users abandoning the ERP solution and preferring the older methods. Financial constraints is another factor that has seen the of some SAP ERP implementation. This results in ERPs not being implemented to the degree that was initially planned.

Objective 3: To find out critical success factors which should be included in a strategy that facilitates successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe.
The following are the critical success factors that have been seen to lead to successful ERP implementation:

- Support from the executive
- Well defined change management plans
- Employment of skilled personnel in the project team
- Stakeholder involvement particularly end users
- Availability of financial resources

Objective 4: To highlight the key stakeholders that should be included in an ERP system implementation strategy for SOEs in Zimbabwe.
The following persons have been identified as the key stakeholders:

- Management
- Employees
- Specialist consultancy
- Board of Directors

5.3 Findings and Recommendations

The major findings of the study and recommendations are summarised in Table 5.1 below.

Table 5.2 Findings and recommendations

Findings	Recommendations
Training- The study revealed that some of the failures are attributed to lack of training	There is a need for the allocation of adequate training resources. Resources include time money and personnel. The training budget should be set aside from the commencement of the project.
Change Management- There is lack of proper change management.	There is a need for a strategic change management plan. It is recommended that a change management plan be drafted in parallel with business process re-engineering and in consultation with personnel from the affected departments.
Lack of knowledge by management	It was revealed that SOEs are mostly headed by elderly and non-tech savvy persons. This results in a lack of appreciation for technological changes. This in turn may result in a lack of adequate support of ERP implementation projects by management. It is therefore recommended that management is educated on benefits of ERP systems. Proof of Concepts may also be designed so that they may evaluate and appreciate the benefits that can be reaped from adopting ERP.
Project management	The research showed that the choice of a project manager can define whether the project will be successful or not. It is imperative that a project manager with sound experience is chosen and one with experience in managing SAP ERP solutions. ERP projects are very complex and delicate therefore an experienced project manager should be appointed.
Misalignment Issues	It is possible that at times SAP ERP solutions are not a

	fit for particular SOE at all. An ERP implementation may be deemed as a failure when the solution was actually not the right remedy to the problem. Careful consideration therefore has to be done in assessing business needs, defining objectives and selecting a vendor.

5.4 Future Work

Although the study accomplished its objectives there is a need for further studies to be carried out. The study revealed some general information on the reasons for ERP implementation failure in SOEs and possible ways of curbing against this. A case based approached provides deeper insights into why SAP ERP implementations in SOEs fail.

The research showed challenges in change management. Further studies on how to manage change in SOEs will help in developing an implementation strategy that will manage well the transition from legacy systems to ERP systems.

5.5 Chapter summary

The Chapter revisited the aims of the research and discussed the findings of the research and defined a strategy for the successful implementation of ERP in state owned enterprises. Recommendations on how to tackle certain problems in SOEs regarding ERP implementation were given. Areas of further research were also highlighted.

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GLOSSARY OF TERMS

Accuracy

Accuracy refers to the extent to which the target population and the sample match.

Business process reengineering

This involves the process of evaluating current business processes and restructuring them in order to improve product output and quality.

Change Management

It is the Improving the business process using best practices throughout an entire company to improve overall business performance, increase efficiency, and maximise the value of the ERP system.

Data

This is information collected using research tools such as surveys and interviews.

Data Analysis

The process by which data are organised in order to understand patterns of behavior in the population.

Enterprise Resource Planning (ERP)

This is business process software that manages and integrates organisational business processes such as customer relationships, sales, procurement, inventory and accounting.

Implementation

This is the process of configuring the ERP system.

InductiveDataAnalysis

This is a data analysis technique which allows research findings to emerge from dominant themes observed in the data. It is usually used in qualitative studies, where the researcher develops models and theories from the review and analysis and summary of collected data

InformedConsent

This is an agreement between a researcher and a subject concerning how information obtained from the subject is handled. This includes issues like disclosure of information and anonymity of the research subject.

Inventory

A list of all items available in stock.

Key Performance Indicator (KPI)

A KPI is value against which the performance towards attaining organisational goals is measured.

Material Control

This is a process aimed at assuring that there is enough material available for production and sales.

Material Requirements Planning (MRP)

A software system designed to keep track of the demand for raw materials and finished goods.

Sample

This is a subgroup selected from a large group in order to represent the entire group in research

Sampling

This is the process of selecting a sample.

Scheduling

The process of planning and arranging orders in order to maximise productivity, cost and delivery times.

Standard Deviation

A measure of thee dispersion of a dataset.

Systems Administrator

This is the person responsible for the configuration, deployment and upkeep of the ERP system.

ERP Implementation Success

This is when a there is high system utilisation by the users to achieve business objectives. “A system must first be accepted to be used and that should increase the probability of a system success” (Behrens 2005 p.27)

ERP Implementation Failure

Defined by projects that fail to deliver projected business goals on time and on budget and when there is very low system utilisation

ANNEX A: Interview Guide for SAP Experts

My name is **Tanatsiwa Hove Gobvu,** a student at the Midlands State University pursuing a Master of Science Degree in Information Systems. As part of the fulfillment of the requirements of this degree, I have to undertake a field research on ***"A strategy for implementation of ERP Systems in Zimbabwe."*** The information gained during our conversation will be treated with utmost confidentiality and will be used for academic purposes only. If you agree to take part in this interview, kindly sign the informed consent form.

Objective 1: To assess the effectiveness of the strategies which are currently being used for the implementation of the SAP ERP system in SOEs in Zimbabwe.

1. How effective are the current strategies being used for the implementation of the SAP ERP systems in SOEs in Zimbabwe?

Objective 2: To identify the factors contributing towards the current ERP implementation failure in SOEs in Zimbabwe.

2. Which factors are affecting the implementation of ERP in SOEs in Zimbabwe?

Objective 3: To find out critical success factors which should be included in a strategy that facilitates successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe.

3. What success factors should be included in a strategy that facilitates successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe?

Objective 4: To identify the key stakeholders that should be included in an ERP system implementation strategy for SOEs in Zimbabwe.

4. If the SAP ERP system implementation is to be effective enough, who are the key stakeholders that should be included?

Any additions?

Thank you for participating in this interview.

ANNEX B: Interviewee informed consent

Interview for the dissertation "A strategy for implementation of ERP Systems in Zimbabwe."

By this, I agree to be interviewed by the researcher having understood the purpose of the research. I therefore, permit the researcher to use my statements in her academic research ONLY.

Signature: ……

Date: ……

ANNEX C: Questionnaire

LETTER OF INTRODUCTION

Dear respondent,

I am **Tanatsiwa Hove Gobvu**, studying towards a Master of Science Degree in Information Systems with the Midlands State University (MSU). I am currently conducting a research entitled "***A strategy for implementation of ERP Systems in Zimbabwe."*** The purpose of this letter, therefore, is to kindly request you to respond to the attached questionnaire. The information you give will be treated confidentially and at no time will your name be referred to directly. The information given will only be used for academic research purpose.

Thank you in advance for your time and cooperation.

SECTION A: GENERAL

1. Gender

Male	Female

2. Department

Department	Tick applicable
Finance	
Human Resource Management	
Supply Chain Management	
Sales and Distribution	
Project System	

Quality Management	
Production	
Production Planning	

SECTION B: To assess the effectiveness of the strategies which are currently being used for the implementation of the SAP ERP system in SOEs in Zimbabwe.

5. Indicate your rating of the effectiveness of the modules of SAP ERP systems being implemented in SOEs in Zimbabwe.

1 – Not sure, 2- Not Effective, 3- Effective, 4 – Highly effective.

No	**Feature**	**Effectiveness rating**			
		1	**2**	**3**	**4**
1	Financial Accounting and Controlling				
2	Human Resource Management				
3	Financial Supply Chain Management				
4	Material Management				
5	Sales and Distribution				
6	Project System				
7	Quality Management				
8	Plant Maintenance				
9	Production Planning				

SECTION C: To identify the factors contributing towards the current ERP implementation failure in SOEs in Zimbabwe.

6. Which of the following factors are contributing towards the current ERP implementation failure in SOEs in Zimbabwe?

No	**Factor**	**Yes**	**No**

1	Reluctance by management to adopt technology		
2	Lack of skills by employees		
3	Financial challenges		
4	Lack of knowledge by the management		
5	Absence of specialist consultancy		
6	Adverse government policy		

SECTION D*: *To find out critical success factors which should be included in a strategy that facilitates successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe.

8. Which of the following success factors should be included in a strategy that facilitates successful implementation of projects for SAP ERP systems in SOEs in Zimbabwe?

No	**Factor**	**Tick applicable**	
		Yes	**No**
1	Clear understanding of strategic goals		
2	Commitment by top management		
3	Excellent project management		
No	**Factor**	**Tick applicable**	
		YES	**NO**
4	Organizational change management		
5	Multi-site issues		
6	Focused performance measures		
7	Extensive education and training		
8	Data accuracy		
9	A great implementation team		

SECTION E*: *To identify the key stakeholders that should be included in an ERP system implementation strategy for SOEs in Zimbabwe.

No	Stakeholder	Tick applicable	
		Yes	No
1	Management		
2	Employees		
3	Specialist consultancy		
4	Board of Directors		

End

I thank you for your participation.

ANNEX C: Expert Approval

OVERALL COMMENT

All elements for a successful implementation have been included and the strategies defined can effectively ensure successful implementation. The strategy is in order but take note of the following issues:

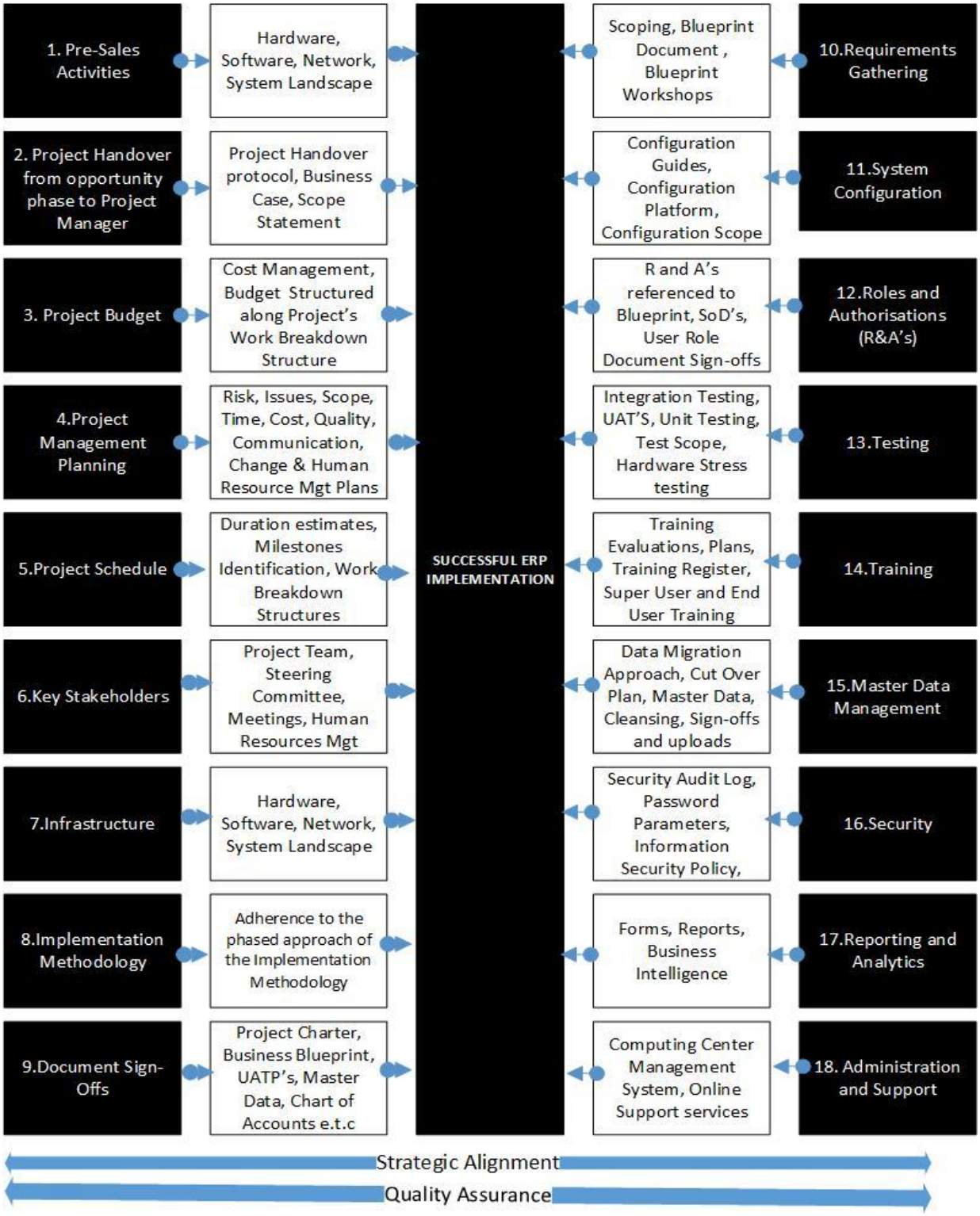
1. Pay attention to the order of activities so that there is clarity on the flow of activities. So a numbering on your activities both in the diagram and in the table could do justice.

2. Be clear on activities that are applied throughout the implementation life cycles e.g. OCM for clarity

3. Project management planning, while its an activity and event at the beginning, there is need to clarify that these plans are updated and modified as the project progress to keep the implementation under control

Review of the proposed strategy by Mr O. Makausi (CISA, CRISK, CGEIT, Bsc Computer Science, MBL)

ANNEX D: Strategy after Expert Approval



ANNEX E: Strategy's Thematic Map after Expert Approval

Process/ Grand Theme	Deliverables/Sub Theme	Strategies/ Basic Themes
1. Pre-Sales Activities	Demos	- Presentations of an outline of the design and functionality of the system to be developed - Processes demonstrated at Demo presentations adopted in Final solution
	Solutions Architecture	- Tenders responded by knowledgeable personnel prescribing the right solutions which address the clients' pain points
	Costing	- Appropriate onsite , offsite days and resource rates on costing document to suit required solution and not tailor made to fit client's budget - Experienced consultants on costing document to suit required solution and not tailor made to fit client's budget
2.Project Hand-Over	Project Handover Protocol	- Signed Contracts from opportunity phase like End User License Agreement, Statement of Work and Third Party Statement of Work handed over to Project manager for project commencement - Internal Delivery Management documents like Final Project Calculation, Risk Assessment Results and Effort Estimation handed over to project manager
	Business Case	- Projects' objectives support business and technology strategies of the organisations - Proposed solution aligned with projects' objectives described
	Scope Statement	- Stakeholders approval of the Scope in the Opportunity phase - Scope , deliverables and implementation strategy documented in the opportunity phase
3.Project Budget	Cost Management, Budget Structured along Project's Work Breakdown Structure	- A realistic allocation of authorised financial resources over a specific period of time for a particular scope to avoid budget overruns
4.Project Management Planning	Risk, Issues, Scope, Time, Cost, Quality, Communication, Change & Human Resource Management Plans	- The procedures for handling / management of respective project areas during the project are defined and signed - Updating and modification of the Plans as the project progresses to keep the implementation

		under control
5.Change Management	Organisational Change Management (OCM)plan	- Documentation of essential Change Management Initiatives
	Organisational Change Management (OCM)Charter	- A formal process to address how the changing needs and capabilities of an organization will be addressed
	Project Change Logs	- A list of changes made during the project
	Change Management Trainings	- Trainings to prepare the users of the system to embrace the changes that comes with the new system
6.Project Schedule	Duration estimates, Milestones Identification, Work Breakdown Structures	- Frequent Updates of the project's milestones , activities and deliverables as the project progresses
7.Key Stakeholders	Project Team Composition	- Project team consists of members stated in the Project Charter
	Steering Committee	- Top Management Support crucial - Steering Committee composition in line with Project Charter
	Meetings	- Regular project team meetings with progress updates - Regular Steering Committee meetings with highlights on key risks , issues and progress
8.Infrastructure	Hardware	- Physical Environmental Controls suitable for the location of the servers at the data centers - Hardware sizing process appropriately done
	Software	- Strong Data base Access Controls - Operating System used appropriate for system version - Strong Application Access Controls - Use of a platform that manages the lifecycle of the solutions implementation e.g. Solution Manager
	Network	- Strong Network Security controls - Limited business partners permitted to connect to the network - Non- Dialogue Users Connections to the Network's termination even after permitted time has expired - SNC protection applied to RFC calls. - Logging switched on and monitored for Router Connections for remote access
	System Landscape	- Setting up of the system landscape in relation to the prescribed solution - Configuration work flowing in a phased

		sequential manner across the environments in the system landscape, from the Development Environment to the Quality Assurance Environment and finally to the Production to avoid room for fraudulent activities
9.Implementation Methodology	Adherence to the phased approach of the Implementation Methodology	- An output from the previous phase should be an input for the next phase
10.Document Sign-Offs	Project Charter	- Document signoffs to signify correctness, completeness and authority to progress to the next stage of the implementation
	Business Blueprint	
	Acceptance Test Procedures	
	Master Data	
	Phase Closures	
	Project Management Plans	
	Chart of Accounts	
11.Requirements Specification	Blueprint Document	- A well-defined Blueprint document acts as a base for the successful implementation of the ERP system since it provides a detailed description of the company's business processes and system requirements to adapt to the company's needs
	Blueprint Workshops	- Well-structured workshops for the requirements gathering process provides good input from the system users for the crafting of a comprehensive Blueprint Document
	Scoping	- A detailed scoping exercise before contract design brings out the identification of gaps the new system should address
12.System Configuration	Configuration Guides	- Referencing to client specified Configuration guides and not to standard Configuration Guides which are not applicable to clients' specifications during system configuration - Client to remain with Configuration guide for support purposes
	Blueprint Reference	- Configuration done with reference to the Blueprint which holds the clients' requirements specifications
	Configuration Environment	- Configuration work done in the Development Environment and tested in the Quality Assurance environment and finally carried to the Live environment for production
	Scope for the Configurations	- Signing of Addendums for additional scope to avoid scope creep

13.Roles and Authorisations	User Role Document	- Alignment of the roles in the organizational structure with those in the business processes - Signed Roles and Authorisations
	Roles and Authorisations configurations	- Consistent Role naming - Configuration of approved roles with limited authorisations
	Segregation of Duties	- Separation of duties in roles intended to minimize errors and fraud
14.Testing	Integration Testing	- Verification of the interaction of the various modules in the ERP
	Hardware Stress Testing	- Intense and thorough test to determine the stability of the system after its implementation
	User Acceptance Test Procedures	- Signing of all processes by users of the system during Acceptance Test Procedures , unsigned processes realigned to fit user specifications
	Unit Testing	- validation of each unit module for functionality
	Test Scope	- A predefined scope for the testing procedures
	Testing's Integration with Change Control	- Testing processes following the Change Management protocols by testing - work in the quality assurance environment that was developed in the development environment.
15.Training	Training Plan	- A plan for the outline of the training process that will guide the trainer in the training program.
	Training Register	- Training records for the trainees that were present during training
	Training Evaluations	- Assessments for the effectiveness of the training program
	Super User Training	- Effective training for all the system expert users
	End User Training	- Knowledgeable Super Users to properly train end users - Training for end-users routinely conducted
	Consultants' training	- Regular training for consultants to keep abreast with the changing trends in technology
16.Master Data Management	Master Data Cleansing	- Verification and Validation of master data for consistency and accuracy
	Master Data Sign Offs	- User approvals for master data consistency and accuracy through signatures to allow for master data uploads
	Data Migration Approach	- A formal strategy for the movement of data from a legacy system to a new system
	Cutover Plan	- An executable Plan that communicates to the stakeholders the steps, timing and logistics for the transition to the Go-Live phase.

	Master Data Uploads	- Accuracy, Completeness and Existence of master data insured in the importation of legacy data in batches to the target system - Use of upload programs with low error- rates e.g Legacy System Migration Workbench (LSMW).
17.Security	Security Audit Log	- Active logging to monitor all the transactions that take place in the system
	Password Parameters	- Password settings in line with the global best practices standards or with the Information security policy
	Sensitive Transaction Codes	- Locking of sensitive transaction codes in the Live Environment - Users not permitted access to sensitive transition codes in the Live Environment
	User Access	- User Access control for sensitive programs and tables
	Tables and Programs security	- Protection for tables and programs from unauthorised users
	SAP Router	- Monitoring of logs on the router to avoid unauthorized changes to the router's file permissions table
	Information Security Policy	- Rules and boundaries set for the protection of the organisations' information and technology
	Super User ID's	- Default users secured properly by changing the standard passwords for super user id's
18.Reporting and Analytics	Forms, Reports, Business Intelligence	- Development of reports specified during requirements gathering for use by management during decision making
19.Administration and Support	Computing Center Management System	- A log to keep track of all challenges the system is facing like low memory or hard disk
	OSS	- Use of the Online Support Services