THE IMPACT OF THE IMPLEMENTATION OF AN ENTERPISE RESOURCE PLANNING SYSTEM IN THE SOUTH AFRICAN SOCIAL SECURITY AGENCY, NORTH WEST REGIONAL OFFICE

By

ITUMELENG SILAS MOGOROSI

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Supervisor: Prof. Lubbe

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DECLARATION

I, Itumeleng Silas Mogorosi, hereby declare that this dissertation entitled, "The impact of the implementation of ERP system in SASSA North West Regional Office in 2011, is an original piece of work produced by myself, and all references and sources have been accurately reported and acknowledged, and that this document has not previously, in its entirely or in part, been submitted to any University in order to obtain an Academic qualification.

Itumeleng Silas Mogorosi Date: 02 May 2011

ABSTRACT

Enterprise Resource Planning (ERP) systems are part of information systems on which organisations depend when conducting business. An ERP system offers useful functionality in the smooth running of any organisation. This dissertation investigates the impact of ERP implementation at SASSA North West Regional Office. It highlights problems of the current ERP system by delineating the weaknesses and pitfalls. The relevant literature has been visited and has served as a primary data that adds value to the dissertation. Collation of the relevant data is followed by a discussion of the employee perception of the impact of ERP implementation. The relative lack of research of impact on ERP implementation is the primary impetus of this study. The sample was drawn from SASSA North West Regional Office employees who were cooperative in the execution of the study. As a result of this, the research on the subject has moved beyond the limited confines of ERP implementation to focus more on the impact of the ERP system. ERP system is focused on standardisation and synchronisation of information as a result of improved organizational efficiency, but unfortunately problems with the ERP system can create challenges and dissatisfaction among the end users, resulting in failure to deliver the anticipated benefits. The findings of this study revealed that there is deficiency in the ERP system; employees are worried about data loss when they use the system, find system errors, experience difficulty in exporting data, and are not satisfied with the quality of output from ERP system. SASSA management should explore opportunity to ensure that the employees are trained to be familiar with the ERP system, improve system reliability, reduce possible system errors, and look at the conclusion and recommendations made in this dissertation.

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Overview of the study

1.1 Introduction

Enterprise Resource Planning (ERP) evolved from Material Requirement Planning and Manufacturing Resource Planning in order to meet the needs of industry and was named by the Gartner Group of Stamford, Connecticut, USA in 1990. Since then the ERP market has expanded worldwide (Urban and Mashinini, 2008:224).

The consequence of this is that, Companies and state departments need to go through growth and change in differing forms to survive their current environment. One method of business growth has been discussed by Thompson and Stickland (2001) who state that one of the most frequently used strategies employed is to form an enterprise that has competitive strength and a larger share of the overall market. These strategies are supported by software like ERP systems. Yankey, Willen, Wester Jacobus and McClellen, (2005) who states that no sector in the economy has remained unaffected by growth. In the non-profit sector, organisations grapple with wide-ranging managerial, service, financial, technological, and other external environmental changes. Yankey, Willen, Wester Jacobus and McClellen, (2005) has identified the use of different strategies as a characteristic of the changing non-profit sector. This change is further impacted upon by changes in software leading to end-users feeling that they are being ignored in the process.

The literature used in this chapter is retrieved largely from the Internet to support the discussion of the problem statement, research design and the layout of the study.

1.2 Background to the problem statement

It seems the pace, magnitude and direction of change will continue to accelerate in the 21st century, with organisations adapting to the changes, assuming a more powerful and prominent role in many countries and economies around the globe. Some of the factors driving organisations to consider the use of ERP system include the need to service customers in a more personal and individual way, the pace of technological development, and striving to achieve a sustainable competitive advantage (Urban and Mashinini, 2008:223-224). Debreceny, Gray, NgLee and Yau (2005:9) state that one of the developments in Business Information Systems over the last decade is the adoption by medium and large scale organisations of ERP systems. These behemoth are generic software systems that facilitate an enterprise's transaction processing requirement across its information supply chain.

Calitz and Calitz (2000:97) are in agreement that ERP implementation is often associated with changes to existing business processes. ERP is customisable and use standard application software, which includes application areas such as sales and distribution, finance, human resource and materials management. Newlin (2000:34) asserts that organisations justify ERP implementation based on the desire for process improvement, data visibility, operating cost reduction and increased responsiveness to customers through improvement in strategic decision making. Furthermore, Newlin (2000:34) noted that Deloitte Consulting found that the motivation for ERP implementation fell into one of two categories: a resolution of technological problems and vehicle for solving operational problems such as non-competitive business performance and ineffective business processes. Others choose to implement ERP because of the seamless integration of all information flows (Newlin, 2000:34). ERP systems are often viewed as the strategic computing platform for organisations, however over 70% of ERP implementation has been judged as unsuccessful. ERP implementation success studies typically deal with issues such as ERP project implementation problems and critical success factors. As a consequence, some effort has been made in an attempt to identify the factors responsible for a successful ERP implementation (Wang, Shih, Jiang and Klein, 2008:1610).

Koh, Gunasekaran and Cooper (2009:241) argue that the customers expect a prompt, flexible service, with some attention paid to increased quality and reduced costs. Businesses today face a stark reality: anticipate, respond and react to the growing demands of the market place or perish. As a result of severe market competition, modern businesses and organisations are constantly on the lookout for ways to improve their processes and to obtain competitive advantage. One way in which many companies have tried to achieve this advantage is through the implementation of the integrated IS known as ERP.

1.3 Problem statement

Inside SASSA, system standardisation has become an important issue to concentrate on. The disparate business processes have been causing inefficiencies within the service. The differing computer systems support processes have aggravated the problems. Consequently, it has became SASSA's IT strategy to implement an ERP system.

The problem that arises now is to determine if staff were trained properly to use the ERP and if this training was successful at SASSA, NW Regional Office. Hence the need to investigate and determine the impact of staff usage on the success of an ERP system in SASSA's North West Regional Office. Kansal (2006:165) states that ERP is a socio-technical challenge that requires a different outlook from technology driven innovation. It depends on a balanced

perspective where the organisation, as part of a total system, is considered. Furthermore, many organisations adopting ERP have experienced conflict with their business strategies while some of the ERP projects are characterised by unhappy staff, delays and cost overruns (Kansal, 2006:165).

Despite an increased need for better Information Systems (IS), professionals with exposure to ERP, universities and colleges have been slow to incorporate the technical aspects of ERP software and concepts in their IS curricula. Such delay has increased the gap between IS skills that the organisations require and the content of IS programmes (Boyle, 2007:267). Seymour and Roode (2008:74) concur that the implementation of ERP systems generally shows disruptive implication for the workforce affected by them.

Urban and Mashinini (2008:229) concur that despite the widespread adoption of ERP systems and corresponding benefits, many ERP systems failed and face implementation difficulties because of workers resistance to adapt to changes. Furthermore, over the years technology projects fell short of their goals because they fail to grasp the reality of managing change and selling the concept inside the company. In some instances, the problems were not technical but rather on the software or people side, which has been neglected and the implemented system is resisted (Urban and Mashinini, 2008:229).

Urban and Mashinini (2008:225-228) identify the problem areas in selecting and implementing an ERP system as: inadequate financial research, functional constraints, times constraints, skills constraints, complacency, selection committees, scalability, role of consultants and vendor influence. Despite the wide spread adoption of ERP systems and corresponding benefits, many ERP fail and face implementation difficulties because of workers resistance to adapt to changes (Urban and Mashinini, 2008:225-228).

The results of the study conducted by Seymour and Roode (2008:80) highlight many ERP issues. Users had high workloads, were exhausted and often found themselves under restrictive authorisations and their learning reduced. Cross-functional cooperation was strained and information needs were not always met. Some staff felt that their work was threatened by the introduction of ERP while others felt challenged.

Nicolaou (2004:81-83) argues that the problems that arise during the implementation of ERP systems can preclude an organisation from realising anticipated benefits or even recovering the cost of the implementation effort. Furthermore, he highlights that less successful ERP implementation was reported to be negatively affected by lack of understanding of the system by users, inadequately trained and support for end users to understand the newly adopted

business processes and workflows, inadequate system testing, and inadequate communication of system objectives (Nicolaou, 2004:81-83).

1.4 Research Objectives

The aim of this study is to investigate the impact of the implementation of ERP system in SASSA North West Regional Office. The specific objectives are:

1.To identify and analyse reliability considered to ensure successful ERP system implementation;

2.To describe the benefits and implementation of the ERP system;

3.To analyse the usefulness of the ERP system; and

4.To identify and analyse quality to be considered to ensure successful ERP system implementation for SASSA organisation.

1.5 Research design

Ghauri *et al.* (1995) state that one reason for collecting and using quantitative data is to collect individual data and aggregate them to analyse organisations. To separate pre-decided elements, pre-developed instruments are used and the results are analysed quantitatively. The research methodology in this study is quantitative in nature. Qualitative techniques in the form of a questionnaire were used to establish the required information from the relevant people in the department. The specific methodology was a survey of the employees that are using ERP to obtain their assessment on the ERP usage and reliability.

1.6 Importance and significance of the study

The consolidation of information for national reporting purposes is frustrating and time consuming. In addition, the lack of timeous information due to the delays in extracting and combining the information may lead to incorrect management decisions being made. This may be detrimental for a business that runs on cost recovery only and sufficient cash flow is important for it to continue with its daily operations. SASSA's business strategy is to align all the processes, which must include all business processes. A single business software system aligns and in turn meets the SASSA's strategic objectives. The standardisation of the business systems nationally may produce a cost saving opportunity thereby reducing costs within the long term. The process may increase the functionality and effectiveness of the business by reducing duplication of effort if the staff uses it correctly. The intentions of this research are

to assess the usefulness of ERP to SASSA North West Regional Office and establish how user friendly the system is.

1.7 Dissertation Layout

The study is divided into five chapters that include, this introductory chapter and the chapters described below.

Chapter two – Literature Review

This chapter provides the background data necessary for the research and the development of the research questions. It defines business control, business systems and as reviews Management Information Systems. ERP characteristic and architecture is defined, followed by the rationale for a business undertaking an ERP initiative. User obstacles are also discussed highlighting ERP implementation traps and the literature review is concluded by the research questions that still remain to be answered.

Chapter three – Research Methodology

This chapter guides the reader through the practical aspects of the research. It discusses the sampling design and sampling methods. The research design is reviewed, followed by the data collection and data analysis. Limitations in the research methodology are also highlighted.

Chapter four – Discussion of findings

This chapter reviews the empirical findings of the survey conducted at the SASSA based on analysis of data gathered from the respondents through the questionnaire. In this chapter the data gathered is tabulated, expressed graphically, and statistically analysed.

Chapter five – Recommendations and Conclusion

This Chapter Five concludes the report providing recommendations and a conclusion regarding the training and usefulness of the Enterprise Resource Planning system in SASSA.

1.8 Conclusion

This chapter serves as the introduction and outlinesthe foundation of the subsequent research. It discusses the research problem to place the study into perspective as well as the selected research methodology and highlightsthe objectives to be achieved through this business research.

The background of the research is described including how. The ERP system resulted in structural and strategy transformation within SASSA introducing the need for training and

addressing user helpfulness. The motivation for the research is documented followed by the value added by the research. A brief preliminary data analysis is discussed. In closing, a brief outline of the dissertation chapters is presented. The next chapter describes the literature that details ERP and all its facets.

Chapter 2

Literature Review

2.1 Introduction

The subject of this research is conducting research into the usefulness of an ERP system in a not-for-profit organisation. The not-for-profit organisation under scrutiny is the SASSA office in the North West Region.

The reviewing of relevant literature is a lengthy task and takes place in many forms. Part of the literature search was performed through the Internet where the search engines Google and Google Scholar were used. The keywords applied were that of 'Enterprise Resource Planning' and 'ERP implementation'. Other sources used were text books, white papers and journals relevant to the research topic.

The chapter firstly defines ERP. The purpose of the previous items is to act as an introduction to Enterprise Resource Planning (ERP). ERP, its characteristics, and architecture are defined, followed by the rationale used by a business to undertake an ERP initiative. The literature review highlights ERP implementation traps and user training. Lastly, the literature review is concluded by the research questions that still remain to be answered.

2.2 Enterprise resource planning

According to Jakovljevic (2000), ERP software is a set of applications that automate finance and human resources departments and help manufacturers handle jobs such as order processing and production scheduling. ERP began as a term used to describe a sophisticated and integrated software system used for manufacturing.

2.2.1 Manufacturing and logistics

Manufacturing and logistics encompass a group of applications for planning production, taking orders, and delivering products to the customer. Some of the modules are: Operations (production) planning, Engineering, Shop floor control, Procurement management, Order entry and processing, Sales marketing and after sales, Warehouse management, Distribution management, Project management, Plant maintenance, Customer service management (Jakovljevic, 2000).

ERP systems incorporate functionality for manufacturing such as forecasting, distribution requirements planning, inventory management, master production scheduling, materials requirements planning and capacity requirements planning (Jakovljevic, 2000).

2.2.2 Finance and accounting

Finance and accounting encompass modules for bookkeeping and making sure that the accounts are paid and/or received on time. Some of its modules are: General ledger, Accounts receivable and payable, Fixed assets, Cash management, Budgeting, Treasury, Cost control, Financial consolidation (Jakovljevic, 2000).

ERP supplies support to all three levels of the business management, that is, on an operational, tactical and strategic level. Jakovljevic (2000) writes that the scope of ERP financial functionality has been increasingly going beyond traditional transactional business functions by enabling organisations to deliver real-time performance analysis directly on the desktops of CFOs, CEOs, and business managers.

He further continues that leading systems increasingly leverage OLAP technology, which embeds business information warehouse tools. These enable users to aggregate and analyse information from multiple sources and have access to a rich set of predefined performance indicators and strategic applications such as strategic planning/forecasting and balanced scorecard (Jakovljevic, 2000).

2.2.3 Human resources and payroll

Human resources and payroll encompass applications for handling personnel-related tasks for corporate managers and individual employees. Some of the most common modules are: Human resource administrations, Payroll, Benefits, Self-service HR (Jakovljevic, 2000).

Human resource management systems focus on strategically managing a company's human capital. Jakovljevic (2000) writes that analysing the workforce and strategically managing the company's human capital has become the latest focus of human resource management systems (Jakovljevic, 2000).

Leading ERP packages deliver key HR information to managers' desktops such as head count and cost analysis, business line managers with selected reports and performance indicators, as well as providing employees with Web self-service access to their HR information (Jakovljevic, 2000). ERP characteristics and architecture are discussed in the following section to give a holistic view of the system.

2.3 ERP characteristics and architecture

ERP's integrated structure is supported greatly by its physical infrastructure and architecture. Jakovljevic (2005) writes that the first ERP software packages were applied in a mainframe computer environment.

Jakovljevic (2005) elaborates that this 'client/server' structure is preferred for several reasons:

- The use of personal computers instead of dumb terminals increases the computing power at the desktop.
- Graphical processing that is highly CPU intensive occurs at the client level and not the central computer level.
- With the use of distributed databases, system speed is increased.
- The hardware costs are less than that of mainframe systems (Jakovljevic, 2005).

2.4 A Business Rationale for ERP

Jakovljevic (2000) describes ERP as a concept in today's business world. The term refers to a method of getting and keeping an overview of every part of the business (a bird's eye view, so to speak), so that production, development, selling, and servicing of goods and services will all be coordinated to contribute to the company's goals and objectives Jakovljevic (2000) Reviewing a business rationale for ERP, Jakovljevic (2000) writes that the three major reasons why companies undertake deployment of ERP applications are:

- To integrate financial data - As the CEO tries to understand the company's overall performance; s/he may find different versions of the truth. Finance may have its own set of revenue numbers, while sales has another version, and the different business units may each have their own versions of how much they contributed to revenues. ERP creates a single version of the truth that cannot be questioned because everyone is accessing the same repository of data.
- To standardise manufacturing processes - Manufacturing companies - especially those with an appetite for mergers and acquisitions - often find that multiple business units across the company make the same part using different methods and computer systems. Standardising those processes and using a single, integrated computer system can save time, increase productivity, and optimise headcount.
- To standardise HR information - Especially in companies with multiple business units, HR may not have a unified, simple method for tracking employee time and communicating with them about benefits and services. ERP can resolve that problem.

Jakovljevic (2000) goes into detail that ERP achieves the above on the fundamental premise that the whole is always greater than the sum of its parts. The traditional legacy application systems, which organisations generally employed in the past, treat each transaction separately.

They are built around strong boundaries of distinct enterprise functions that a specific application is meant to cater for. ERP, on the other hand, stops treating these transactions separately as stand-alone activities and considers them to be part of the inter-linked processes that make up the entire business.

Almost all typical application systems are nothing but data manipulation tools. They store data, process it, and present it in the appropriate form whenever requested by the user. In this process, the only problem is that there is no link between the application systems being used by different departments.

An ERP system bridges this gap by using an integrated database system. There are hundreds of data tables, which store data generated as a result of a diverse transaction, but they are not confined to any departmental or functional boundaries. Rather, they are integrated to be used by multiple users, for multiple purposes, and at multiple places (Jakovljevic, 2000).

A wider-ranging list of rationale for implementing an ERP system is developed by Jakovljevic (2000) and shown in Table 1.

Why companies purchase ERP?		
Strategic Reasons	**Enabling (Tactical) Goals**	**Technical Reasons**
Enable New Business Strategies	Reduce Cost/Improve Productivity	Standardise System/Platform
Enable Globalisation	Increase Flexibility	Improve Quality & Visibility of Information
Enable Growth Strategies	Integrate Business Processes	Enhance Technology Infrastructure
Extend Supply/Demand Chain	Integrate Acquisitions	Provide Y2K Compliance
Increase Customer Responsiveness	Standardise Business Processes	
	Improve Specific Business Processes/Performance	

Table 1: Essential ERP- Its Functional Scope (Jakovljevic, 2000).

After reviewing Jakovljevic's rationale, a further reasoning for an ERP implementation is when a business is leveraging on a previous ERP investment. Koch (2002) elaborates with reference to the cost of ERP, that the Meta Group recently did a study looking at the total cost

of ownership (TCO) of ERP, including hardware, software, professional services, and internal staff costs. The TCO numbers include getting the software installed and the two years afterwards, which is when the real costs of maintaining, upgrading, and optimising the system for the business, are felt. Among the 63 companies surveyed—including small, medium and large companies in a range of industries—the average TCO was $15 million (the highest was $300 million and lowest was $400,000).

While it's hard to draw a solid number from that kind of range of companies and ERP efforts, the Meta Group came up with one statistic that proves that ERP is expensive no matter what kind of company is using it (Koch, 2002).

In today's competitive business environment the world is constantly getting smaller. This has all been a result of the exponential development of technology aiding ease of communication and movement among the different countries. As Jakovljevic (2005) states, in today's dynamic and turbulent business environment, there is a strong need for organisations to become globally competitive. The survival guide to competitiveness is to be closer to the customer and deliver value-added products and services in the shortest possible time. This, in turn, demands integration of the business processes of an enterprise, which is the stronghold of ERP.

2.5 Migration obstacles

In this section the importance of having a reasonable fit of a business' process to the standard of ERP package is reviewed. This should not be the only matter assessed with an ERP implementation. The migration obstacles of this type of implementation need to be examined. A great deal is written on this subject and Turbit (2003) refers to them as 'the traps' of an ERP implementation.

An area discussed within the traps is Management support and commitment. This gives emphasis to the need for strategy alignment between the business and IT. The section is thus concluded addressing this subject with respect to an ERP implementation success.

2.5.1 Implementation traps

2.5.1.1 Time and effort

Turbit (2003) states that the implementation effort is bigger than ever talked about, or ever imagined. An organisation to have implemented ahead of schedule or under budget is yet to be found.

Koch (2002) also stresses that one should not to be fooled when ERP vendors tell management about a three- or six-month average implementation time. Those short implementation periods all have a catch of one kind or another: the company was small, or the implementation was limited to a small area of the company, or the company used only the financial pieces of the ERP system (in which case the ERP system is nothing more than a very expensive accounting system).

To do ERP right, the way business is done will need to change and the ways people do their jobs will need to change too. That kind of change doesn't come without pain. Unless, of course, the ways of doing business are working extremely well (orders all shipped on time, productivity higher than all the competitors, customers completely satisfied), in which case there is no reason to even consider ERP.

Koch (2002) further notes that the important thing is not to focus on how long it will take—real transformational ERP efforts usually run between one and three years, on average. It is better to understand why the business needs it and how the management will use it to improve the business.

Weightman (2003) writes that it is important to treat the day the ERP project goes live as the start of the next phase of the journey, not the finish because an ERP implementation represents much more than simply a project. Typically, the upfront investment is large, but the life expectancy of the application should lie somewhere between 10 years and 20 years. Customers then have already established their team and given it 15 to 30 months to bring the project to its launch date.

The mistake is often made that this type of project has a set start and end date. Weightman explains that it is important to treat the day the ERP project goes live as the start of the next phase of the journey, not the finish because an ERP implementation represents much more than simply a project. Post-go-live preparation is essential to the project's success else all will collapse in a little heap left for IT to resurrect or dispose of. The analogy of 'planning for a wedding instead of a marriage' can be used to describe that of an ERP implementation. For success there has to be a total commitment from all parties.

2.5.1.2 Hidden Costs

Koch (2002) notes that, although different companies find different land mines in the budgeting process, those who have implemented ERP packages agree that certain costs are more commonly overlooked or underestimated than others. Armed with insights from across the business, ERP experts vote the following areas as most likely to result in budget overrun.

1. Training—Training is the near-unanimous choice of experienced ERP implementers as the most underestimated budget item. Training expenses are high because workers almost invariably have to learn a new set of processes, not just a new software interface. Worse, outside training companies may not be able to help the business. They are focused on telling people how to use software, not on educating people about the particular ways the company does business. One enterprising CIO hired staff from a local business school to help him develop and teach the ERP business-training course to employees. Remember that with ERP, finance people will be using the same software as warehouse people and they will both be entering information that affects the other. To do this accurately, they have to have a much broader understanding of how others in the company do their jobs than they did before ERP came along. So take whatever was budgeted for ERP training and double or triple it up front. It will be the best ERP investment the business will ever make (Koch, 2002).

2. Integration and testing—Testing the links between ERP packages and other corporate software links that have to be built on a case-by-case basis is another often-underestimated cost. A typical manufacturing company may have add-on applications from the major e-commerce and supply chain, to the minor sales tax computation and bar coding. All require integration links to ERP. The business is better off if it can buy add-ons from the ERP vendors that are pre-integrated. If the business needs to build the links, expect things to get ugly. As with training, testing ERP integration has to be done from a process-oriented perspective. Veterans recommend that instead of plugging in dummy data and moving it from one application to the next, the business should run a real purchase order through the system, from order entry through shipping and receipt of payment which is the whole order-to-cash process and preferably with the participation of the employees who will eventually do those jobs (Koch, 2002).

3. Customisation—Add-ons are only the beginning of the integration costs of ERP. More costly, and something to be avoided if at all possible, is actual customisation of the core ERP software itself. This happens when the ERP software cannot handle one of the business processes and the business decides to mess with the software to make it do what the business wants. The customisations can affect every module of the ERP system because the modules are all so tightly linked together. Upgrading the ERP package becomes a nightmare because the business will have to do the customisation all over again in the new version. Maybe it will work, maybe it won't. No matter what, the vendor will

not be there to support it. The business will have to hire extra staffers to do the customisation work, and keep them on for good to maintain it (Koch, 2002).

4. Data conversion—It costs money to move corporate information, such as customer and supplier records, product design data and the like, from old systems to new ERP homes. Although few CIOs will admit it, most data in most legacy systems is of little use. Companies often deny their data is dirty until they actually have to move it to the new client/server set-ups that popular ERP packages require. Consequently, those companies are more likely to underestimate the cost of the move. But even clean data may demand some overhaul to match process modifications necessitated, or inspired, by the ERP implementation (Koch, 2002).

5. Data analysis—often, the data from the ERP system must be combined with data from external systems for analysis purposes. Users with heavy analysis needs should include the cost of a data warehouse in the ERP budget and they should expect to do quite a bit of work to make it run smoothly. Users are in a pickle here: refreshing all the ERP data every day in a big corporate data warehouse is difficult, and ERP systems do a poor job of indicating which information has changed from day to day, making selective warehouse updates tough. One expensive solution is custom programming. The upshot is that the wise will check all their data analysis needs before signing off on the budget (Koch, 2002).

6. Consultants ad infinitum—when users fail to plan for disengagement, consulting fees run wild. To avoid this, companies should identify objectives for which its consulting partners must aim when training internal staff. Include metrics in the consultants' contract; for example, a specific number of the user company's staff should be able to pass a project-management leadership test similar to what the consultants have to pass to lead an ERP engagement (Koch, 2002).

7. Replacing the company's best and brightest—it is an accepted wisdom that ERP success depends on staffing the project with the best and brightest from the business and IS divisions. The software is too complex and the business changes too dramatic to trust the project to just anyone. The bad news is that a company must be prepared to replace many of those people when the project is over. Discuss with HR early on to develop a retention bonus programme and create new salary strata for ERP veterans. If the business lets them go, the business will wind up hiring them or someone similar back as consultants for twice what the business paid them in salaries (Koch, 2002).

8. Implementation teams can never stop—most companies intend to treat their ERP implementation as they would any other software project. Once the software is installed, they figure the team will be scuttled, and everyone will go back to his or her day job. But after ERP, this team can't go home again. The implementers are too valuable. Because the implementers have worked so closely with ERP, they know more about the sales process than the salespeople and more about the manufacturing process than the manufacturing people. Companies can't afford to send their project people back into the business because there's so much to do after the ERP software is installed. It is in analysis and insight that companies make their money back on an ERP implementation. Unfortunately, few IS departments plan for the frenzy of post-ERP installation activity, and fewer still build it into their budgets when they start their ERP projects. Many are forced to beg for more money and staff immediately after the go-live date, long before the ERP project has demonstrated any benefit (Koch, 2002).

9. Waiting for ROI—one of the most misleading legacies of traditional software project management is that the company expects to gain value from the application as soon as it is installed, while the project team expects a break and maybe a pat on the back. Neither expectation applies to ERP. Most of the systems don't reveal their value until after companies have had them running for some time and can concentrate on making improvements in the business processes that are affected by the system. And the project team is not going to be rewarded until their efforts pay off (Koch, 2002).

10. Post-ERP depression—ERP systems often cause mayhem in the companies that install them. In a recent Deloitte Consulting survey of 64 Fortune 500 companies, one in four admitted that they suffered a drop in performance when their ERP system went live. The true percentage is undoubtedly much higher. The most common reason for the performance problems is that everything looks and works differently from the way it did before. When people can't do their jobs in the familiar way and haven't yet mastered the new way, they panic, and the business goes into spasms (Koch, 2002).

2.5.1.3 Resources

Choosing an implementation team can be a challenge but failing to staff the team with the right employees from the business as well as the IT side of the company, including management, spells disaster. A further challenge is the ratio of members from the different sectors. According to Weightman (2003), this can be a major challenge.

A company needs top-notch players for these projects — not just technical stars but stellar performers from the business side as well. Indeed, if the company has to trade off in terms of quality in one area, it should never skimp on business talent. It can perhaps trade off on technical expertise because the consultant it retains can bring in skilled technicians.

Weightman (2003) also highlights that often the employees released to work on the implementation team are those that are not busy within the company, usually junior personnel, with less experience. This is an area the business does not want to be sparing with its talent. If processes are going to be redesigned, the business wants its best people to ensure that these optimised processes most closely match what has been envisioned in the business case in which Weightman (2003) stresses that it is easy to justify the use of this top talent. The company is investing in their careers and in its own future success. By the time the project goes live, the best talent is immersed in the new strategy and the new operating system for the company. The result is a tremendous inventory of exceptional talent — and the company will realise firsthand that the best projects succeed when the team members are its stars.

Just as whom the business chooses is important so is the mix of team members. The project members should comprise programme managers to junior members from the technical and business side of the company. This is not just a technology project. Weightman (2003) explains that ERP technology must work, but one has to appreciate that 30 percent of the challenge of an ERP project usually is attributable to technology and the remaining 70 percent involves people and processes.

Bhuta (2001) also refers to the selection of 'Angel Users' as part of the team. These are the end users that should be treated as angels and receive extensive training at an earlier stage. They get involved early to ensure that all the automated and changed processes meet the business needs. Ownership of the system will eventually be handed over to these users.

2.5.1.4 Training

Training does not only have a large effect on an implementation's hidden costs but insufficient training will also cripple an ERP implementation. In a survey, discussed by Turbit (2003) of organisations that have implemented ERP systems;'10 common causes of disaster' were identified. Insufficient training as well as change management was mentioned as the major problems with implementation.

ERP systems tend to replace old manual systems. As such it is a quantum leap for all areas of the company (Turbit, 2003). The whole company has to make a large transition from the old

system with which the employees have been working with for a long period of time. The move is from a system they are totally comfortable with, to that of superior complexity and performance. Turbit (2003) also states that the transformation happens at a technical level as well as a business level. New ways need to be learnt in a very short space of time (Turbit, 2003). Not only do they have to be trained in the new way of running their business processes, but the tools they use to do this have changed as well.

The end users are not the only employees requiring training. The IT team that will support these employees need to be sufficiently trained for their supporting role. According to Turbit (2003) as most people are upgrading from old technology, the skills of the (IT) staff need to be upgraded as well. The upgrade is also going to place significant demands on a team who are geared to maintain an old but stable environment. Usually this effort is underestimated.

New ways need to be learnt in a very short period of time. The earlier training is begun, the better for the transition in the end. Sufficient time needs to be allocated to train the 'Angel Users'. Bhuta (2001) explains that if the users are unable to understand and use the system, the project is a failure even if the team executed everything else perfectly. That is why it is important that time is allocated to end user or 'Angel User' training. The best approach is the 'train the trainer' approach, where the end users are trained by one of their own, someone within the same business unit. Usually the trainers are exposed to the system throughout the implementation cycle. Users should have access to non-technical user documentation and should be shown how to access and use the new system.

This approach is successful as the employees being trained will feel more at ease and receptive being trained by 'one of their own'. It also releases the IT project team for many of the other tasks they are required for.

2.5.1.5 Management support and commitment

Low executive buy in is highlighted by Turbit (2003) as 'a trap' for ERP implementation. Implementation projects need senior executive involvement to ensure the right participation mix of Business and IT, and to resolve conflicts. According to McKie (1999), whether an outside consulting firm handles the bulk of a financial system implementation or an in-house team does all the work, the project needs executive backing, a clearly identified champion and a well-chosen team to support the implementation. The necessary executive backing should come from the CFO or CEO; the supportive executive should participate in weekly or monthly steering-committee meetings that examine the project's progress. The project champion should be an individual for whom the project represents a promotion opportunity.

This person should be given the training s/he needs to ensure that the project succeeds. The project's team must spread responsibility for the project's success across the finance and information systems functions and relevant operational departments. The team should be provided with incentives to succeed, and each member should have a clear description of his or her responsibilities in the project.

Any ERP project overhauls a lot of business processes, roles, responsibilities, standards, and data definitions — and these are changes that cannot be pursued from the bottom up. An effective governing council such as a steering group is essential, as is a single executive sponsor, dedicated and effective, to chair it. The project will trigger difficult, sometimes nasty, issues and a senior executive who is accountable can make those decisions and see that the steering group understands and accepts them (Weightman, 2003).

Bhuta (2001) suggests that a 'project champion' should be secured. The champion is usually the visionary with access to various levels of management. Top management commitment can be secured by demonstrating that technological automation enables business strategy to be realised (Bhuta, 2001). The project champion is there to guide and encourage commitment from the company's senior executive team. They in turn support the project team with the appropriate actions when deadlines are slipping or morale deteriorates as the stress of an ERP implementation starts to become evident in the project team.

In the view that communication is always paramount, Bhuta (2001) advises to set up a steering committee that includes the senior IT manager, implementation team manager and each business unit manager. This committee should provide updates to senior management and project sponsors periodically concerning the status of the project.

Without this top management buy-in, it will be difficult for the project to be a success. An ERP implementation must be part of the corporate business' strategy which is supported by all business management. It is a project that requires a great amount of time and effort from the business and employees take their cue from the respective managers. In the end the employees sustain what the managers' support.

2.5.1.6 Poor project management, adherence, and accountability

Turbit (2003) states that very few organisations have the in-house experience to run such a complex project as implementing a large-scale integrated solution. It usually requires outside contractors to come in and manage such a major exercise. It can be a fine line between abdicating responsibility and sharing responsibility. Many consulting firms do a disservice to their clients by not sharing the responsibility.

Accountability for the project needs to be shared to ensure that a substantial amount of knowledge transfer happens from the consultants to the business managers and key users. McKie (1999) notes, that companies that use an external consulting firm to manage the bulk of an implementation need to be sure that the right amount of knowledge is transferred to company employees during the implementation.

2.5.1.7 Poor planning

Turbit (2003) further explains that planning covers several areas such as having a strong business case, to the availability of users to make decisions on configuration, to the investing in a plan that captures all the issues associated with implementing.

Bhuta (2001) suggests developing a roadmap to show the various phases of the overall initiative. The roadmap should show what the end result will be and the time scale anticipated in achieving it. It is essential to make sure that the roadmap is blessed and communicated by management throughout the organisation.

The above paragraphs deal with planning at a detailed level. Planning on a broader level is also important. In the greater scheme of things, within a company's business plan, many projects of varying size and complexity are being accomplished concurrently.

An ERP undertaking is ranked high on the scale of effort, time, costs, and especially business change. Due to its longer timeframe and intense effort and change requirement, it is advisable that this type of project is run singularly.

2.5.1.8 Scope creep

Scope creep is another reason for ERP implementation failure. Turbit (2003) warns us, because of the richness of functionality, the 'toy box effect' can take over. Users see all the functionality available and suddenly they want it now. The scope can grow out of control. The project scope needs to be kept in check.

The project scope must be clearly defined at the outset of the project and should identify the modules selected for implementation as well as the affected business processes (Sherrard, 1998). It is thus important that the original business case should be adhered to. Each addition or change to the scope, no matter how small, will collectively put the project over its timelines and budget.

2.5.1.9 Less process flexibility

The existing environmental mix between what is done manually and what is done by the system will swing dramatically after implementation. Many more tasks will be automated. Automation will significantly reduce the flexibility of how the company operates as a business. Turbit explains that with ERP, new ways need to be learnt in a very short space of time. Things have to be done consistently. No longer is the business able to do something one way at one branch and another way at another branch. The system is going to determine how the business does things at all locations. Even within one location, special treatment may not be possible anymore without changing the configuration of the system. If the system says the customer can either have 0, 15, 30 or 60 day credit terms, the business can no longer offer 45 day terms without changing configuration. If consistency can be implemented, there is a good potential for cost savings as well as getting rid of special arrangements that reduce profit (Turbit, 2003).

2.5.1.10 ERP impacts

Endless benefit is gained from the ERP system implementaion, but the transition from no integration, interface based systems, to that of seamless integration can be difficult. The essence of ERP is the immediate effect one transaction has on all relevant data and modules of the system. As Turbit (2003) notes, the word 'Enterprise' in ERP means that what ever happens on one area has a ripple effect in other areas. Understanding the implications of actions of one area, on other areas of the company, is not something that happens overnight (Turbit, 2003).

Data integrity becomes fundamental. As noted, the migration of manual processes to automated ones will not be simple. Each action of a process has to be reflected in the system at the correct time. Without all the correct links in the chain the process cannot be completed. This will result in the incorrect information showing on the system and a further negative ripple effect on other business processes. A new ranking of accountability, responsibility, and communication is now given to the business process owners. Turbit (2003) describes this scenario as if stock is moved from location A to Location B and the information is not put into the system. The system will tell someone to get the material from A and when it is not there, they have to go looking. At the same time it is telling someone else to put new material in B, but B is full. The first person finds the original material in B and logs it into the system. Double the quantity is now in the system again and it doesn't re-order. And so it goes on and everyone is blaming the system.

2.5.1.11 Infrastructure

Most ERP projects call for a change or upgrade of the company's infrastructure. Jakovljevic (2005) informs that ERP software applications are nowadays possibly the most demanding software in terms of hardware requirements, being a high-end, mission critical application that should provide exceptional scalability in order to address the needs of corporate giants. Turbit (2003) explains that ERP systems tend to replace old systems. As such it is a quantum leap for all areas of the company (Turbit, 2003). The changes might not seem of much significance to an IT literate employee that constantly is exposed to the updating of technology and gladly accepts it. An ERP system expands to all employees and the business will find that more of the workforce is now exposed to the computer technology than what was required with the legacy system and previous business processes. Turbit (2003) uses the analogy of replacing the trusty Ford with a high performance Ferrari. This happens at a technical level as well as a business level.

McKie (1999) explains that a project manager shouldn't think about beginning an ERP implementation, especially if it will run on a new server or database platform, before the supporting technology is running smoothly and the expertise to support the new system is in place. For example, before an ERP package that uses an Oracle database is installed on a UNIX server, the implementation's organizers need to make sure that the server and database are configured to optimally meet the demands of the ERP suite. Organisers also need to have on staff or on contract someone with in-depth knowledge of UNIX systems administration and an experienced Oracle database administrator.

Configuring a technology platform correctly for an ERP package can take weeks, and ERP-proficient database administrators are hard to find and expensive to hire. However, an incorrectly configured technology platform or lack of expertise can lead to disaster (McKie, 1999). To affirm McKie's reasoning above, the rolling out of the new communications and hardware must occur a while before the ERP 'go live' to ensure the correct working of the system. This also allows the user a time period to adjust to the new hardware and resolve problems they are experiencing that affect other software they used before they need to make the next switch to using the ERP software.

2.5.1.12 Corporate culture and change management

Starting with corporate culture, according to Turbit (2003), what most managers who have been through an ERP implementation, will tell, is that the biggest impact is on 'Corporate Culture'. It is always underestimated and never overestimated.

Corporate culture is a combination of two things:

- The type of people who are employed by a company. Examples of these are their personal values, skills and habits.
- The way the organisation works. This includes items such as the focus, decision making process, stability and attitude of staff.

To successfully take on an ERP system, an organisation needs to change its 'Corporate Culture'. It may need to change from being highly flexible and not paying a lot of attention to consistency or accuracy, to one of being almost obsessed with detail. The organisation will have to be prepared to have Business Practices that are actually adhered to rather than just being documented and forgotten (Turbit, 2003).

Further, Turbit continues that another dimension to 'Cultural Change' is the timeframe in which the change is to be made. It basically needs to happen over a few days. One week the business can bend all the rules and get away with it; next week the system will not let it (Turbit, 2003).

Weightman (2003) also discusses corporate culture in trying to create a solution incompatible with the company's culture. In the 1990's, research found that many companies with ERP projects saw them as a silver bullet that would solve all their problems, even if the 'style' of solution wasn't compatible with their corporate culture traditions.

An executive might say he or she wants to operate in a globally centralised fashion, to be more like a Wal-Mart, with the strength and discipline of a global head office. However, this doesn't work if the firm's culture is one of decentralised entrepreneurship. It then can't use technology to force change in the culture of the company. So if it has a decentralised structure, it would better opt to install a decentralised ERP application or recognise the enormous change-management mountain it faces.

Bhuta (2001) discusses the all-important topic to put in place a change management program. Mission-critical initiatives will most likely change an organisation's culture. Therefore, it is necessary to include this important aspect in the company's implementation strategy. The organisation needs to determine how to deal effectively with change. It needs to be prepared for issues such as the following:

- Resistance: People will resist the change for fear of losing some control over their business unit, system or even their jobs.

- Fear of Failure: On the other hand, people may choose to sit on the sidelines rather than risk project failure. This may foster a low sense of urgency that could result in delay of project initiation and delivery.
- Non-Visionaries: The business will be dealing with people who don't have a clear understanding of the long-term relevance and importance of the project.

The key to any change management programme is communication, communication and communication! Management needs to communicate the importance of the project throughout the organisation (Bhuta, 2001).

Turbit (2003) also lays an emphasis on this topic of change management. He writes that change management is about setting expectations that lessen the pain of change. People involved in a change expect to go from A to B. Perhaps where they are actually going is to C. Change management is about getting them used to the idea that C is the real destination.

He further states, what is the cost to an organisation of a system that is forced upon people, and with which they feel little ownership? They will either sink it, or ensure it never reaches its potential. Either way, the organisation will never get the return on investment it imagined (Turbit, 2003).

Turbit (2003) puts change management on the top of his failure list: Most important of all, and the single biggest failure point for ERP implementations is the need for change management. The need for change management is not likely to be recognised until it is too late. The changes required to corporate culture are likely to be grossly underestimated. It is going to be hard enough to cope with the technical issues without having to address people issues as well.

2.6 Change management

ERP systems in an organisation are a large investment and entail change in current business processes and practices. Change management and user participation have a significant impact on the implementation process. In addition, change management has been described as the process which requires tools and techniques to manage the people side of business in order to achieve the required business outcomes and to realise that business change fits effectively within the social structure of the workplace (Urban and Mashinini, 2008:225-227).

(Urban and Mashinini, 2008) defines change management as the means to plan, initiate, realize, control and finally stabilise change processes on both the corporate and personal levels (Urban and Mashinini, 2008:227).

Urban and Mashinini, (2006) view the change management process as allowing practitioners to separate change management as a practice from business improvement techniques (Urban and Mashinini, 2008:227).

Urban and Mashinini, 2006) consider organisational change based practices from the perspective of several change management models, which may be used as a means of structuring and guiding one's thinking and actions during organisational change. Change is always daunting but if organisations keep up with the fast pace of technology implementation they may be one step ahead of competition (Urban and Mashinini, 2008:227). A successful ERP implementation must be managed as a programme of wide ranging organisational change rather than as a software installation effort.

Nicolaou (2004:83) states that an important factor that causes extended productivity dips after roll out of an ERP system, relates to ineffective change management. Loh and Koh (2004:3437) assert that efficient change management programme, culture and continuous monitoring and evaluation of performance are amongst the critical success factors of ERP implementation.

In order for an ERP system to become effective for many companies, massive changes must occur because an ERP system strives to increase efficiency, often the results of it is a new mode of operations or utilization of resources (Dowlatshahi, 2005:3752). Loh and Koh (2004:4334) indicate that change management is important and this starts at the shakedown phase and continues throughout the entire ERP implementation life cycle. ERP-wide culture and structure change should be managed which include people, organisation and culture. During the period of change users should be involved in designing and implementing the business processes and the ERP system and formal education and training should be provided to help them. Employees need training and on-site support for staff as well as managers during the cycle of ERP implementation (Loh and Koh, 2004:4334).

An important factor that causes extended productivity dips after rollout of an ERP system relates to ineffective change management. Whether an evolutionary or revolutionary tactic is followed during the implementation process seems to be an important factor that affects the management of change and subsequent outcomes (Nicolaou, 2004:83)

Boonstra (2006:39) developed the processual perspective of change more fully, and argues that to understand change, one needs to take into consideration: (1) the past, present and future context in which the organisation functions, (2) the substance of change itself and its significance, (3) the transition process, tasks, activities, decisions, (4) political activity, and

(5) the interaction of these factors (Boonstra, 2006:39). Wu (2011: 6942) asserts that a list of critical factors in implementing ERP systems includes project teamwork and composition, organisational culture and change management, top management support, business plan and long term vision, business process re-engineering and customisation, effective communication, project management, software development, testing and troubleshooting, monitoring and evaluation of performance, project championing, organisational structure, end-user involvement and knowledge management (Wu, 2011:6942).

2.7 ERP Implementation

Urban and Mashinini (2008:225-226) argue that successful ERP implementation can provide real business benefit and sustained performance, whereas an unsuccessful implementation may have disastrous consequences. Operating costs as those associated with forms administration, data capturing, computer processing, report preparation, report utilization, report storage, system and software surveillance are all necessary in ERP implementation.

In addition, Urban and Mashinini explain that ERP implementation can be evaluated against a set of key performance indicators and critical success factors. ERP implementation and related change issues can assist firms in considering the significant factors influencing the change process.

Human resources play a role when business tools such as an ERP system are implemented, more so in an environment where companies have to adapt to cutting edge technological changes (Urban and Mashinini, 2008:225-229). Newlin is in agreement that organisations justify ERP implementation based on the desire to process improvement, data visibility, operating cost reductions, and increased responsiveness to customers through improvements in strategic decision making (Newlin, 2000 : 34).

Kansal (2007:170) provides that the implementation of ERP system is a strategic, complex and expensive activity having to extend its scope beyond operational improvements induced by the software's functionality and generally expressed by a reduction in cost to the strategic impact of ERP on the competitive position of the organisation, which is usually based on qualitative indices and estimates.

Furthermore, senior management has the responsibility to understand the dynamics and integrative and strategic nature of ERP as well as the prevailing competitive conditions in the global market place before proceeding into ERP implementation (Kansal, 2006:170).

Tsai and Hung (2008:348) highlight that business process difference and difficulty of system integration is viewed as negative factors for ERP implementation. When users are trained to be familiar with the ERP systems, ERP implementation will improve (Tsai and Hung, 2008:348).

Babey (2006:28) is in agreement that implementing a new system without fully training all users is a waste of time and money, yet many institutions do not adequately fund an on-going training programme. Loh and Koh (2004:3438) provide that ERP implementation depends on effective project management programme, business plan and vision, effective communication, strong ERP teamwork and composition, efficient change management program, culture and continuous monitoring and evaluation of performance.

Jones, Cline and Ryan, S (2006:412) assert that appropriate organisational knowledge must be incorporated into an ERP system so that the system has a sufficient underlying knowledge structure to achieve the support. Knowledge from a diversity of perspectives and experiences must be shared and incorporated during ERP implementation. The ERP implementation is the sharing of the knowledge that individuals possess about the processes and business frameworks.

The implementation of ERP systems typically requires that cross functional language and terminology of an organisation be standardised so that a common, organisation wide database can be built (Amrani, Rowe and Geffory-Maronnat, 2006:82). The length of time required to a successful implement an ERP system ultimately varies based on the needs of the end user.

The first factor in implementation is the identification of the equipment required to operate the system and to provide easy and comprehensive access for all users. In reality, organisations should expect ERP implementation to take as long as 2 years. This length of time is usually required for employee training and completion of data conversion so that all authorised users may have access to all available data through the ERP system.

The time associated with ERP implementation varies from one organisation to another due to barriers encountered. A business plan and vision to steer the direction of the project is needed throughout the ERP life cycle. A business plan that outlines proposed strategic and tangible benefits, resources, costs, risk and timeline is critical. This will help maintain focus on business benefits (Dowlatshahi, 2005:3752-3759).

Boyle and Strong (2006) surveyed 105 IS professionals involved with ERP implementation and support and identified a number of key technical skills that industry expects from graduates of ERP programmes including: (a) ERP administration and security, (b) systems

analysis, (c) systems design and integration, (d) systems life cycle management, (e) relational databases, (f) ERP related programming language, (g) data management, (h) decision support systems, (i) system testing, and (j) project management (Boyle, 2007:268).

Frolick (2003) states that successful implementation means involving, supervising, recognising and retaining those who have worked or will work closely with the system. Without a team attitude, a total backing by everyone involved in ERP implementation will end an ideal situation. ERP implementation should take an organisation to the next level of competency. It should not cause turmoil and high employee turnover. ERP implementation can ensure that valued employees are not lost in the process.

Excellent planning, incorporating employee involvement, and good communication should be at the top of any organisation's list when considering an ERP implementation effort. Although success is not guaranteed by involving the proper employees and treating them with the respect and the recognition they deserve, it is definitely a major part of the equation. Without dedicated people to implement and apply the system, the company will be wasting its money on purchasing an ERP package that will never be used to its fullest capabilities (Frolick, 2003:43-49).

Tsai, Shaw, Fan, Liu, Lee and Chen (2011:481-482) are in agreement that ERP implementation requires knowledge of activities associated with configuring and testing ERP modules, installing software, and training employees in preparation for ongoing operation, maintenance and support of a customised vendor supplied system.

The complete implementation of an ERP system is a difficult task and includes the optimal adaptation and installation of all the subsystems in the respective departments of the enterprise. Jones et al. (2006:412) concur that ERP implementation is sharing of the knowledge that individuals possess about processes and business framework.

Motwani, Subramanian, and Gopalakrishna (2005:530) argue that given the large financial commitment that an ERP project requires and the potential benefits it can offer if successfully implemented, it is important to understand what is needed to ensure a successful ERP implementation.

The performance of the ERP implementation can be summarised as per ranking by the respective organisation (Kansal, 2006: 169).

Table 2.1 Performance of the ERP implementation

Normal	Important	Critical
• More value added services • Reduced over time • Awareness about industry standard and current status • Customisation of ERP software • Process transfer of competencies	• Improved satisfaction with business process • Improved vendor relation • Faster decision making • Efficiency in work progress • Periodic review of middle management and key users commitment • Positive attitude • Presence of strong Information and Technology division • Recognition and reward to the concerned • ERP solution matching with core competencies	• Refined business process • Increased in inventory turns and better control • Strong commitment of top management • No parallel run

Source: Kansal (2006:109)

2.8 Cost of ERP

Major construction firms are starting to recognise the benefit of ERP systems. However, they are often hesitant to invest and adopt these systems due to high costs and risks associated with ERP system implementation (Chung, Skibniewski, Lucas, and Kwak 2008:373). Babey (2006:21) asserts that the institutions planning to implement ERP system often fail to understand the total cost of ownership of such an undertaking. Total cost of ownership includes not only the implementation costs but acquisition and long term ongoing support cost as well. It includes all indirect and direct costs that might be associated with the life cycle stages of an ERP project. ERP implementation costs more in human and financial resources than any other issue related to IT. Attempting to implement an ERP system without sufficient funds will only lead to less than effective outcome, and to unhappy stakeholders and customers.

It is unlikely that the new system will meet business needs or improve business processes to the fullest extent possible (Babey, 2006:21-32).

Wu, (2011) highlights that it must be noted that ERP implementation is complex and costly, even though advanced ERP systems have evolved several favourable features such as: more wide intensive and extensive coverage, better flexibility in handling functions and web–centric application.

Dowlatshahi (2005:3752-3760) explains that the cost of ERP systems is based on hardware, software and overall installation cost. ERP systems costs are based on the number of users and the number of copies of software installed in various ERP terminals. The cost of an ERP system depends on the size of the operations and the scope of its implementation. Furthermore, the total cost of ownership associated with an ERP system includes a large initial cost followed by costs to maintain and upgrade the ERP system. An organisation should anticipate incurring the cost when it plans to implement a new ERP system. It is also important to be able to predict maintenance cost of ERP systems for years to come. The long term effectiveness and viability of an ERP system is affected by the company's ability to save labour costs, to eliminate redundant tasks and to increase the operational efficiency of the system (Dowlatshahi, 2005:3752-3760).

Babey (2006:24) states that one of the costs involved usually is the cost of new hardware, including network infrastructure. A realistically developed and funded implementation budget that covers all components and aspects of the project ensures a smooth process and lessens some degree of stress that an ERP implementation places on staff. In addition, an appropriate budget will minimise the surprises of unexpected costs and the abrupt search for funds to cover the cost. If the funds are not available, the project can be put in jeopardy or result in a less than satisfactory implementation.

The decision to implement an ERP system is not made lightly, it is expensive and it usually takes eighteen to twenty four months to implement from the start of the process to when the first function goes live. Attempting to implement an ERP system without sufficient funds will only lead to a less than effective outcome and to unhappy stakeholders and customers.

Institutions planning to implement an ERP system often fail to understand the cost of ownership of such an undertaking. The cost of ownership includes not only the implementation cost but also the acquisition and long term on-going support. It includes all direct and indirect costs that might be associated with the life cycle stages of an ERP project, including its implementation, operation and eventual replacement (Babey, 2006:21-32).

She and Thuraisingham (2007:161) assert that better security solutions bring higher costs and lower performance to a system. This contradiction always exists in any type of system. ERP is the system used to lower the cost and increase the profit of an enterprise. A true ERP budget cannot omit early cost associated with the process of deciding whether or not to implement an ERP system (Babey, 2006:23).

A successful ERP can be the backbone of business intelligence for an organisation, giving management a unified view of its processes. Unfortunately, ERP's have a reputation for costing a lot of money and providing meagre results, because the people who are expected to use the application do not know what it is or how it works. When an ERP fails, it is usually because the company did not dedicate enough time or money to training and managing culture change issues. Faulty technology is often blamed, but eight out of nine times ERP problems are performance related (Motwani *et al.*, 2005:530).

Boonstra (2006:38) asserts that the successful implementation of ERP is urgent, since the costs and risks of these technology investments rival their potential pay-offs. Failures of the ERP system implementation projects may lead to bankruptcy. Botta-Genoulaz and Millet (2006:204) highlight that there are reasons why a company would implement enterprise solutions: the provision of a single source of data, the potential cost reduction (maintaining old computer systems can lead to enormous costs), and the potential gain in business integration when reducing indirect costs, or more precisely, the effect on customer responsiveness and manufacturing productivity if the safes/ordering systems are not linked to the production scheduling systems (Botta-Genoulaz and Millet, 2006:204).

2.9 Success factors

Chung *et al.,* (2008) proposed a taxonomy and interactive model as a framework for organising the concept IS success. They identified six dimensions of information success system being system quality, information quality, use, user satisfaction, individual impact and organisational impact. The six dimensions in the model are proposed to be interrelated rather than independent (Chung *et al.*, 2008:374).

Chung *et al.*, 2008) grouped the best practice questions together into four success factors for ERP implementation as follows:

- To management support, planning, training, and team contributions;
- Software selection efforts;
- Information system area participation, and
- Consulting capability and support.

Furthermore, Ferratt *et al.* (in Chung *et al.,* 2008) validated these success factors through the empirical study of ERP projects (Chung et al. 2008:374). Chung *et al.* (2008:374) highlight three main dimensions related to success of ERP as success factors, intermediate constructs and success indicators. Newlin (2006:36) defines success of an ERP in various ways.

Success may represent staying on time or under budget or it may represent improving the organisation's share of the market as a result of improved information technology. Calitz and Calitz (2000:97-98) assert that the success of an ERP implementation can be evaluated against a set of key performance indicators and critical success factors in ERP projects. Kansal (2006:165) is in agreement that success factors in ERP tend to be correlated; the implication is that changes in any one of them would influence most of the others as well.

ERP success factors include the choice of ERP vendor, the scope of implementation and extent of business process change, anticipated benefits and justification of ERP implementation based on business rather than technical motives and change management during the implementation process (Nicolaou, 2004:82). Frolick (2003:43) states that a successfully deployed ERP system can increase customer satisfaction, reduce inefficient spending, strengthen sales and forecasts, reduce inventory turnaround times, and enhance employee productivity and satisfaction. Babey (2006:28) thinks that a realistic budget plan that includes funds for functional and technical consulting is needed to help ensure a successful ERP implementation.

Loh and Koh (2004:3439) mention the four phases in a typical ERP life cycle being:

- Chartering: decision defining the business care and solution constraints;
- Project: getting system and end users up and running;
- Shakedown: stabilising ,eliminating bugs, getting to normal operations; and
- Onward and upward: maintaining systems, supporting users, getting results, upgrading and system extensions.

ERP systems similar to other new technologies in an organisation require training for employees to be able to use them correctly and effectively. ERP training has been considered as an important element in the success of ERP implementation. If employees do not know how to effectively use the ERP system, the overall success of the system will be significantly diminished.

Organisations must make every attempt to train all ERP users as ERP training can be the most important element in the successful implementation (Dowlatshahi, 2005:3753-3754). Plaza and Rohlf (2008:73) are in agreement and highlight that studies provide evidence that sufficient training is one of the ingredients for success. If training is not provided, the project staff learns on the job, and project duration increases.

Hong and Kim (2002:27) assert that an ERP implementation failure may be fatal to a firm, either wasting sums of money or destroying the competitive advantage of the firm. To manage ERP implementation successfully, a high level of ERP implementation success measure is required. Urban and Mashinini (2008:225-226) provide that success factors identify possible implementation problem areas and allow successful implementation criteria to be established.

Five success factors for ERP implementation have been identified, these include: the executives of the firm, environmental and cultural assessment, nine process change enablers, a structured methodology and a change management programme. The nine process enablers are people, education, communication and marketing, organisation structure, organisation culture, funding, information and information technologies (Urban and Mashinini, 2008:225-226).

Bramorski (2009) indicates that it is important to develop a system exploitation strategy to:

- Identify projects that utilise the base infrastructure and deliver the biggest benefits;
- Find people who understand the business and its processes and the technology;
- Develop benefit focused implementation plans supporter by specific business cases; and
- Establish recognisable benefit delivery processes.

Additionally, success is measured in the phase by the following three things (Newlin, 2000):

- Short deterioration in the key business performance indicators such as process cycle times, inventory levels, and operation labour cost.
- Length of time before key performance indicators and business impacts return to normal.
- Short term negative impacts on organisation's suppliers and customers such as average time on hold, lost calls, lost sales and customer satisfaction levels.

When an organisation moves into the final phase, it is measured by the following: (Newlin, 2000):

- Achievements of business results expected for the ERP project, such as reduced Information and Technology operating costs and reduced inventory carrying costs;
- On-going business improvements after expected results have been achieved.

Chung *et al.* (2008:380) provide the following recommendations to increase the usefulness of the ERP systems

1. Function: The function of ERP system should be well defined to cover the company's necessary business functions.
2. Subjective norm: All members in the company should be encouraged to use ERP system because their use can increase the company's business value and productivity.
3. Output: To make the ERP system useful, the company should focus on enhancing the quality of output during its implementation, especially in management and measurement reports.
4. Perceived ease of use: The ERP system should be easy to use. A complex system decreases usefulness, which also makes users reluctant to work with.
5. Result demonstrability: The Company should clearly define what positive results can be expected from the use of the ERP system before or during ERP implementation.

Tsai *et al.* (2011:481) suggest that successful implementation of an ERP system requires a strategic fit between the product and the organisation. The benefits of ERP depend on the clients operations, maintenance, and upgrading skills and knowledge, which can be learned, acquired and transferred from a consultant. Without external help, few organisations can implement ERP successfully. Furthermore, successful implementation of an ERP system is the result of knowledgeable and dedicated people working together. It entails company-wide commitment, openness to change, good planning and experience, guidance in the discussion of implementation strategy (Tsai *et al.*, 2011:484).

According to Jones *et al.* (2006:412), a successful ERP implementation requires the organisation group to break the barriers of knowledge sharing. ERP systems integrate business processes across functions and units, thereby creating a divergence in the required knowledge of organisational members. ERP implementation is considered successful if it facilitates the accomplishment of a substantial proportion of its potential benefits, which may include: personnel reductions, a decrease in the cost of information technology, better inventory control, and identifiable level of return on investment (ROI), and /or an improvement in order and cash management (Wang *et al.*, 2008:1611).

Lozinsky (in Botta-Genoulaz and Millet,2006:205) suggests that the rewards of a successful ERP implementation are immersed. The operating cost will be reduced (leading to an improved return on investment), improved access to information will make possible agile decision making for better negotiating with customers and suppliers, with no need for rewriting reports, reliable figures will be available to analyse business performance. ERP systems are expected to reduce costs by improving efficiencies through computerisation, and

enhance decision making by providing accurate and timely enterprise-wide information (Botta-Genoulaz and Millet, 2006:205).

For the purpose of achieving a successful ERP implementation, there are issues that must be considered such as: identifying the motivations for ERP adoption, checking the ERP competences for a successful ERP adoption, realising the importance of integration in implementing ERP systems, selecting a suitable ERP system, comprehending critical factors of ERP implementations, and measuring performance and impact. Successful ERP implementation may result in competitive advantages in an innovative age, and has the potential to provide corporations with competitive capabilities, based on the provision of real-time information that can improve the speed and precision of response (Wu, 2011: 6941).

2.10 Research Questions

Much of the problem statement had been solved. However, there are still some items missing and the research questions help with this. These are:

- To what extent is the ERP system reliable and relevant to the job within the organisation?
- What is the extent of the benefit and perceived usefulness of ERP within the organisation?

To what extent does the ERP project foster progress and success quality within the organisation?

2.11 Conclusion

Wu (2011: 6946) states that ERP implementation is viewed as a solution for corporations aiming to meet increased competitive pressures and globalisation. Kansal (2006:170) asserts that the implementation of ERP system is strategic, complex, and an expensive activity to extend its scope beyond operational improvements induced by the software's functionality. That is generally expressed by a reduction in cost to the strategic impact of ERP on the competitive position of the organisation, which is usually based on qualitative indices and estimates (Kansal, 2006:170).

ERP is the technology that drives the reformation in the realm of economy and impacts people's life style indirectly. ERP system now is going towards a system with more coordination/collaboration, higher heterogeneity and integrity, more intelligent, operating on the level of knowledge and even wireless-enabled (She and Thuraisingham, 2007:162).

In Chapter 3 the Research Methodology followed in this study is discussed. The research paradigm and the research methodology are also being discussed, including the population and sample size.

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Chapter 3

Research Methodology

3.1 Introduction

This chapter describes the research methodology used in this study to give answers to the raised questions. In the previous chapter, the research was stated in terms of four questions that remained unanswered from the literature review.

Nicholls (2009:587) states that people are often confused by methodology and have read scientific papers which include a research methodology section and as a result, think that methodology is about the way research study was conducted, how the subject was sampled, how the tests were undertaken and what equipment was used. But what the researchers are actually talking about are the research methods, not the methodology. Hammell (2006:167) defines methodology as a specific philosophical and ethical approach to developing knowledge, a theory of how research should, or ought, to proceed given the nature of the issue it seeks to address.

The questionnaire used in this study provides answers to the research questions developed in Chapter 2. The research questions ask (link to previous chapter), the extent which ERP system is reliable and relevant to the job within the organisation, the extent to benefits and perceived usefulness of ERP within the organisation are reliasable extent to which the ERP project's progress and success are measured successfully within the organisation?

The aim of this study was to assess the impact of implementation of ERP system at SASSA North West Regional Office. To validate this, it was necessary to collect information of the targeted population using the correct methodology and analyse the responses. This chapter defines the research methodology, the data collection methods, the types of questions asked and the development of the questionnaireas well as the population and sample size determination, data handling, researcher compliance with research ethics and conclusion.

3.2 Types of research

3.2.1 Qualitative and Quantitative Research

Qualitative research follows a process of inductive reasoning (where theory is developed) and quantitative research is commonly deductive (where theory is tested) Nicholls (2009:590). Qualitative research often begins with a small sample size (sometimes an individual participant, a solitary text document or a small groups), and follows a rigorously applied but

loose pathway. Qualitative researchers use detailed inclusion and exclusion criteria to sample large numbers of participants with comparable traits.

However, by the same token, there is no hypothesis to be tested in qualitative research, only a problem or research question to explore. New problems commonly emerge as you realise that the original ideas were misguided, so a new pathway is taken through a new territory. With quantitative research, you commonly begin with questions you want answered, and the study is never allowed to stray from its original purpose (Nicholls, 2009:590).

Furthermore, Nicholls states that in setting some of the methodological differences, it might be possible to see some of the distinctions that can be made between qualitative and quantitative research.

The first distinction is that qualitative research allows the study to evolve naturally, rather than imposing a rigid methodological approach on it from the outset. The second is that qualitative researchers analyse their data as they are collating it, as opposed to quantitative researchers who gather it first and analyse it later. A third difference is that many qualitative researchers look to hand over control of the study (to a greater or lesser extent) to their participants and allowing them to define what matters to them and what is superfluous? (Nicholls, 2009:590).

Saunders *et al.* (2007) argue that quantitative research is predominately used as a synonym for any data collection technique (such as a questionnaire) or data analysis procedure (such as graphs or statistics) that generates or uses numerical data.

Table 3.1: Overview of the difference between quantitative and qualitative research (Nicholls, 2009:591)

	Quantitative	**Qualitative**
Purpose	Test theories Establish facts Show casual relationships Predict outcomes Generalise results to specific populations	Develop concepts Explore meaning Describe multiple realities Critique multiple perspectives Produce generalisable theory
Design	Predetermined Structured Unchanging Prescriptive Reproducible	Evolve through the study Continually under review Rigorous application Unreproducible Unstructured
Data	Numerical Quantifiable Statistical Measurable Pre-defined variables	Deals with qualities Extensive Wide ranging Texts emerge throughout Limited use of numerical information
Sampling	Subjects	Participants

	Large numbers Structured selection Represent population Control groups and placebo	Small numbers Purposive and theoretical sampling No effort to represent No control groups / placebo
Participant relationships	Detached Distant Objective, try to be free from bias No interaction or influence Research done on subjects	Participatory Trusting and close Subjective, biases incorporated Acknowledge influences Research done with people
Methods	Experiments Quasi-experiments Surveys Questionnaires Incidence studies	Interviews Observation Focus groups Document analysis Theoretical
Instruments and tools	Scales Tests Inventories Hardware Goniometers, dynamometers	Researcher Recording equipment Schedules
Data analysis	Attempt to falsify experimental hypothesis At the end of data collection Deductive Statistical manipulation Computer packages	Theory builds throughout On-going Occurs throughout Repeated re-analysis Inductive
Outcome	Answer specific hypothesis Statistical analysis Compare findings to other studies Often results in guidelines to follow Test establish theory	Critique problems Narrative / linguistic analysis Words not numbers Thick description Development of new theory
Problems	Controlling variables Relevant to reality Reductionist Western	Non-standard procedures Large volume of words Intensity Doesn't give you a simple answer Time consuming

Source: Nicholas (2009).

The study makes use of research methodologies and techniques in order to collect the necessary data. To collect the necessary data a number of methodological techniques may be utilised, such as, secondary sources and group administration. The study used the quantitative research method to attempt the reconstruction of facts according to the respondent's perspective (Frey and Dishi, 1995:4).

3.2.2 Primary Data

Leedy and Ormrod (2005) refer to primary data as the original information that is collected by the researcher specifically for the research study at hand, for example, data obtained through interviews and surveys.

3.2.3 Secondary Data

Brynard and Hanekom (1997:27) define the secondary sources as data that are already in existence, for example, data retrieved from sources such as databases or libraries. Some of the data that were collected for the study consist of relevant study published and unpublished

materials, ERP journals, and academic books dealing with the subject matter. Leedy and Ormrod (2005) are in agreement that secondary data refers to information that has been previously gathered by someone else for the purpose which can be re-used by the researcher. It includes books, journals, articles and reports among others.

3.2.4 Group Administration

Seroka (1992:21) states that for group administration, the target population sample has to be reached in a particular area by using standardised tests, attitudes scales, and survey questionnaires that have to be administered to all simultaneously. A five day period was given to the respondents to complete the questionnaires.

3.2.5 Survey Technique

The survey technique comprises sources of information derived from an empirical quantitative research that observes data gathered through questionnaires, observations and interviews.

3.2.6 Questionnaire

The questionnaire was used as the data gathering tool. This allowed the collection of quantifiable and qualitative data and the analysis of this data to determine relationship patterns. The target response rate was 80%.

3.3 The Likert scale

Likert scaling was introduced in 1932, and is the most widely used method of measuring personality, social and psychological attitudes. In contemporary usage, the Likert scale presents individuals with positively or negatively stated propositions and solicits respondent's opinions about the statements through a set of response keys. Typically, participants are asked to indicate their level of agreement or disagreement with a proposition on a graded four or five point scale (for example, strongly disagree, disagree, agree, and strongly agree). The fifth point when used, allows for a neutral or undecided selection to be incorporated into the response key as a midpoint (Hodge and Gillespie, 2003:45)

Jamieson (2004:1217) states that Likert scales are commonly used to measure attitude, providing a range of responses to a given question or statement. Typically there are 5 categories of response, from (for example) 1 = strongly disagree to 5 = strongly agree, although there are arguments in favour of scales with 7 or with an even number of response categories. Likert scale falls within the ordinal level of measurement that is the response categories have a rank order, but the intervals between values cannot be presumed equal.

The legitimacy of assuming an interval scale for Likert type categories is an important issue, because the appropriate descriptive and inferential statistics differ for ordinal and interval variables, and if the wrong statistical technique is used, the researcher increases the chance of coming to the wrong conclusion about the significance of his research (Jamieson, 2004:1217).

Two types of analysis are commonly carried out on sets of Likert responses. The first type relates to score building. Responses to items are treated as belonging to a numerical scale, and are either summed over the items, or a factor or latent variable analysis is carried out, and a weighted or unweighted score is produced, which is taken to measure a common characteristic of the item set of a respondent. The second type of analysis is concerned more with providing an ordering of the relative importance of a set of items, and how this relative importance might vary according to other characteristic of the individual (Dittrich, *et al.*, 2007:3).

Nevill and Lane (2007:1) suggest that the researchers, when adopting, analysing, and reporting self-report Likert style data, should take great caution when analysing their data using parametric methods. Adopting non-parametric method is more likely to accommodate the rank style differences between discrete values of a Likert scale, that is, Likert scale data should be treated as interval scale with great caution, but certainly not as ratio scale data.

Pell (2005) states that the issues of the appropriate statistical models for parametric (minimal interval) data and non-parametric (ordinal or categorical) data have been around for at least 50 years , and that the real issue is not between analytical techniques , but in properly understanding the nature of analyses, and the resulting inferences. Furthermore, a number of authors have pointed out that statistical conclusion are valid whenever the distribution of numbers from which the data are sampled meet the assumptions (typically, normality and homogeneity of variance) used to derive particular techniques being applied, irrespective of the measurement process which generated those numbers. The validity of parametric statistics is affected little by relatively gross departures from these assumptions. In addition, the major issues that can affect statistical inferences are those of bias, and lack of independence of the data, which are often ignored because they are difficult to quantify. It is acceptable in many cases to apply parametric techniques to non-parametric data such as that generated from Likert scales, provided that the assumptions are clearly stated, and the data is of the appropriate size and shape (Pell, 2005:970).

One of the principal tenets in constructing instruments is that items be as clear and concise as possible. The more items are characterised as cognitively complex, the more likely

respondents are to misunderstand the question and answer incorrectly. Even small differences in wording can increase the level of cognitive noise and dramatically alter response patterns. Because of their design, Likert questions ask individuals to think along at least two different dimensions, content and intensity. Respondents must evaluate the content of each stated proposition, they must examine the item and decide whether they agree or disagree with the content stated proposition. In addition respondents must assess their level of intensity regarding the stated proposition; they must evaluate how strongly they feel about the proposition (Hodge and Gillespie, 2003:45-46).

Furthermore, Hodge and Gillespie state that the Likert items do not produce uni-dimensional ordinal responses, thus violating a central measurement tenet. The multiplier dimensions inherent in Likert response items may increase measurement error by increasing the level of cognitive noise, a problem that is accentuated by the use of negatively worded items. Likert scale requires individuals to think across at least two dimensions: content and intensity (Hodge and Gillespie, 2003:45-46).

3.4 Population and sample size

Sampling strategy, that is ,design and size, depends on the research paradigm. The quantitative method requires random and representative sampling characterized by larger samples (Leedy and Ormrod, 2005). Sampling in quantitative studies is based on qualities rather than quantities, with researchers searching for participants who might offer rich, thick descriptions of the phenomena under study. Where much quantities research operates by taking vast swatches of the population and group like variables together, qualitative research assumes from the outset that no two people are alike, and concentrates instead on sampling those that can enrich our understanding of the emergent theory. The researcher used simple random sampling for the purpose of this study.

3.5 Data collection method

To serve the objective of this study, which is to determine the impact of the implementation of ERP system in SASSA North West Regional Office by focusing on SASSA employees, the researcher used questionnaires. In this study primary data were collected by means of a survey questionnaire which was distributed to SASSA North West Regional Office. The researcher's sample consisted of different departments drawn from SASSA North West Regional Office. The simple random sampling was used

3.6 Validity and Reliability

Roe and Just (2009:1266) argue that validity is not a single dimensional effort but rather requires an integrated effort on several fronts to develop conclusion that may be defended as valid. Furthermore, Roe and Just define internal validity as the ability of a researcher to argue that observed correlations as casual and the external validity as the ability to generalise the relationships found in the study to other persons, times and setting. Newton and Burgess (2008) highlight that validity refers to the reasons we have for believing truth claims.

Brahma (2009) argues that validity is crucial in management research, measuring unobserved theoretical constructs by observed measures are very common, and that they may be contaminated by measurement error. Measurement error may lead to biased parameter estimates whereby a true substantive relationship may be rejected or a relationship may be proved to be present where actually none is. In other words, measurement error threatens the validity of research findings and undermines much of its contribution (Brahma, 2009).

Easterby-Smith *et al.* (2002:53) refer to reliability as the extent to which data collection techniques or analysis procedures yield consistent findings. It can be assessed by posing the following three questions as noted by Easterby-Smith *et al.*:

1. Will the measures yield the same results on other occasions?
2. Will similar observation be made from the raw data?
3. Was there transparency in how sense was made from the raw data?

3.7 Data Analysis

Fink (1995:43) asserts that after having collected data, the researcher compares and contrasts the information given and then interprets data. The data ispresented in the forms of tables, diagrams, charts and figures. The reason for using these graphic forms is to take advantage of their ability to present large volumes of data on one page in a way that data can be seen at a glance.

3.8 Elimination of Bias

Nicholls (2009:590) asserts that in qualitative research, the relationship between the researcher and the participant is a natural one that develops with the study. The question of bias that plagued experimental studies and threatens the reliability and validity of their test measures are turned on their head and made into a virtue of the study not a vice. In quantitative research, the problem of researcher bias is addressed by both a scrupulous

attention to the separation between the researcher and the participants, and the comprehensive attempt not to influence the outcome of the study. In qualitative research, personal bias is acknowledged as an inevitable feature of humanity and one that is vital if we are to explore the feelings, meanings, and the personal context of participant's lived experiences and reflect on their meaning for us (Nicholls, 2009:590).

The questionnaires were distributed early in an attempt to secure feedback that was not biased by the scores the participants received. Anonymity of the respondents in the research instrument, questionnaire was maintained. The researcher ensured that the prospects of a non-scientific research did not manifest in this study like ego involvement. These measures were to reduce any temptations of biases within the researcher and the respondents as well.

3.9 Ethical consideration

Respondents were approached and informed about the purpose and subject of the study. Their permission to serve as research participants was sought and their consent obtained. Participation in the research was entirely voluntary. The researcher obtained consent from the University and SASSA North West Regional Office to conduct the research in their organisation. The questionnaires were distributed to the organisational staff. Each participant was made fully aware of the nature and purpose of the research and that their anonymity would be ensured. Participants were assured that the information provided would not be used for any other purpose other than the stated.

3.10 Limitation of the study

The limitation of this study was that the sample was obtained from employees at SASSA Regional Office from different departments which limited the generalisation of the findings. The researchers' biggest limitation was, to ensure sufficiently high return rate. Furthermore limitation was that all variables were assessed with the same method. The returned questionnaires may not be representative of the sample originally selected for the specific discipline, which may impact on the relevance of the research findings.

3.11 Conclusion

In this chapter the research design and the research methodology, including the population and sample size have been discussed. The detailed account of both data collection techniques and data analysis has been presented. Issues of the validity and reliability of the study have been detailed, and the ethical issues and limitations of the research have been clarified. A discussion of how these were applied in this study was presented. The following chapter

provides a presentation of findings used in rejecting or accepting the raised questions, a detailed discussion and interpretational and statistical analysis of the data collected from the research methodology described in this chapter. The next chapter provides a presentation of findings, a detailed discussion and interpretational and statistical analysis of the data collected from the research methodology described in Chapter 3.

Chapter 4

Data Discussion

4.1 Introduction

This chapter discusses the research findings and provides analyses and interpretation of data. In the survey, certain specific questions were asked and the analysis was done on application using Pearson correlation co-efficient and p-value. The Pearson correlation method correlates all listed variables with each other and indicates which of the resulting relationships are statistically significant. The survey was conducted with the custodian of the ERP system in different business units within the organisation, to test the impact of implementation of ERP system at SASSA North West Regional Office.

An ERP system is a configurable information systems packages that integrate information and information based process within a cross-functional areas in an organisation. It is probably the most rapidly growing system area in operation today (Wong *et al.*, R2008). Loh and Koh (2004) argue that an ERP has the potential to reduce inventory costs, lower lead-times, increase productivity, facilitate communication, improve information and decision making capabilities and improve customer service. It allows the potential companies to increase their competitive advantage and gain market share (Loh and Koh, 2004). The focus of the questionnaire has been to explore ERP system reliability, relevance, benefits, perceived usefulness and success quality within the organisation to determine the impact of implementation of ERP system at SASSA North West Regional Office on employees.

This chapter opens with a descriptive introduction, the response rate, biographic profile of respondents; the next section reflects the analysis involved in the examination of the data and findings of the target market on the impact of implementation of ERP system at SASSA North West Regional Office.

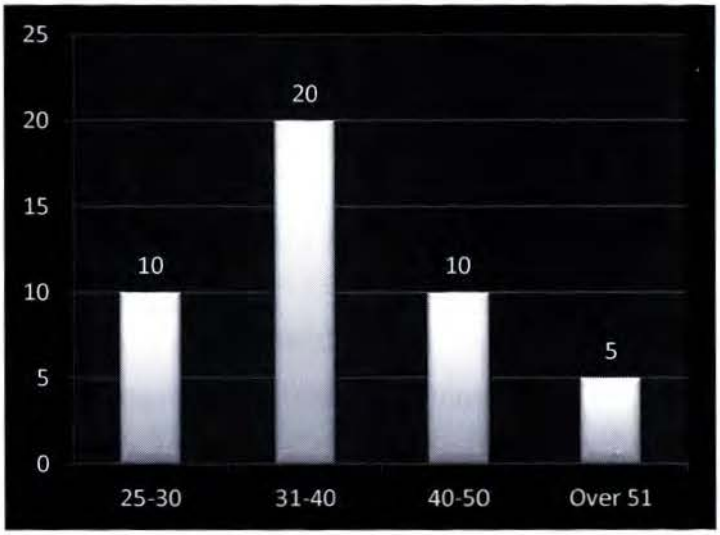
4.2 Response rate

Of the total population (sample?)of 45 approached, 25 (56%) were males, 20 (44%) female). The preference was not given according to sex, the sample breakdown is considered as being a fair representative of the demographics of ERP system role. The figure reflects that employees that use ERP system are dominantly male employees. This may be due to the fact that ERP role historical background supported the employment of male employees; this could be the reason of high representation of male employees within the ERP system environment.

4.3 Demographics

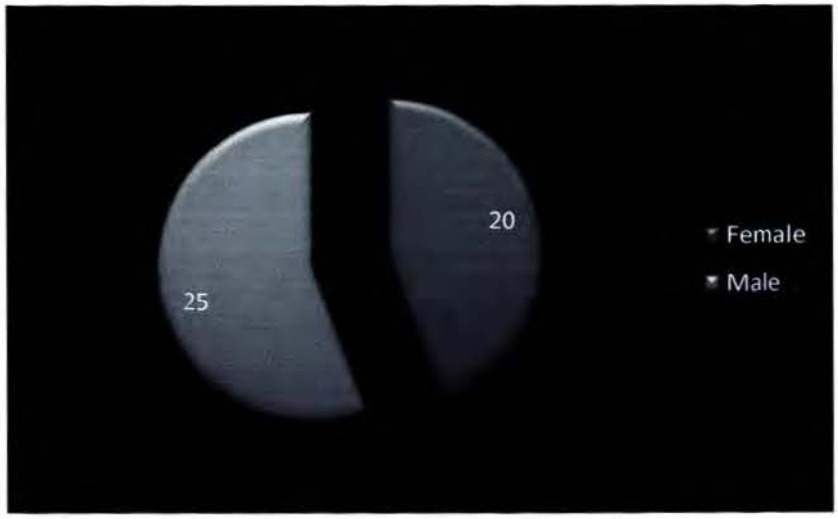
Out of the total sample of 45, Figure 4.1 reflects that employees that occupy IT role are dominantly male employees. This may be due to the fact that IT system roles are given the historical background that supports employment of male employees into IT roles. This could be the reason of high representation of male employees within the IT environment.

Figure 4.1 Ages of Respondents



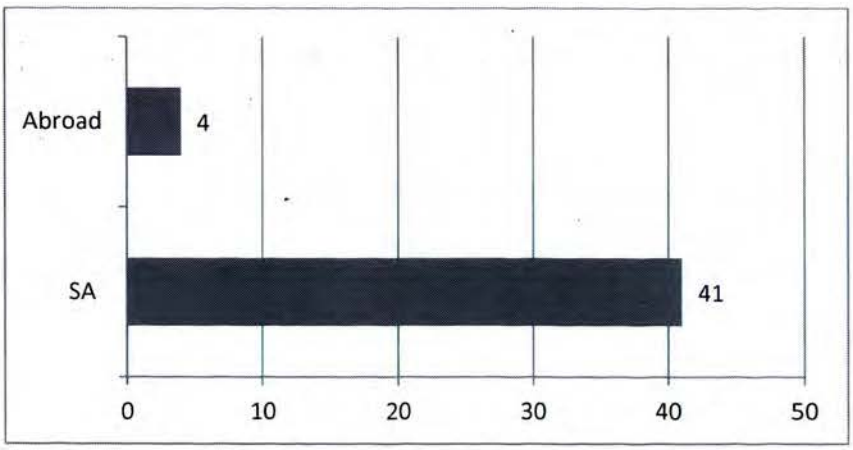
Of the 45 respondents, 10 (22%) aged between 25 and 30 years, 20 (44%) aged between 31 and 40 years, and 10 (22%) aged 40-50 years. The majority of respondents aged between 31 and 40 years; which is an average group within the working class that may need to acquire sufficient work experience to understand the impact of the implementation of ERP system.

Figure 4.2 Gender of Respondents



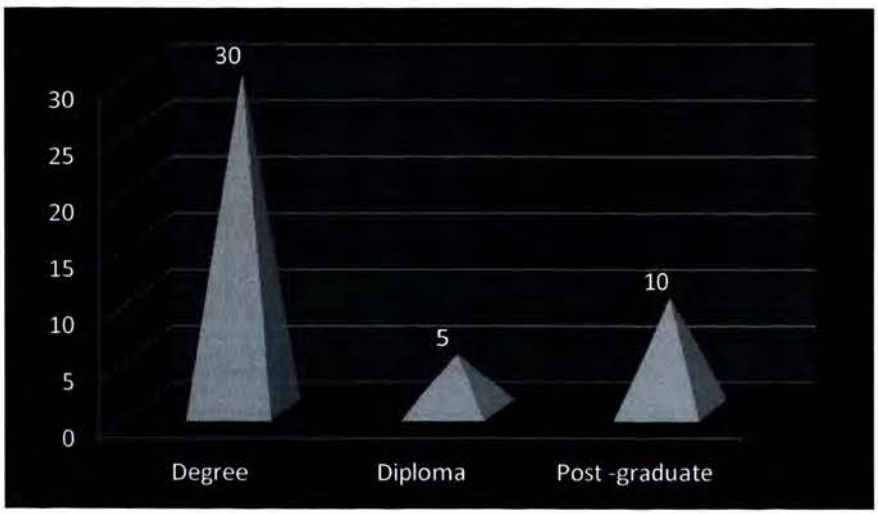
Out of the total sample (56%) were males, 20 (44%) female

Figure 4.3 Grew up in SA



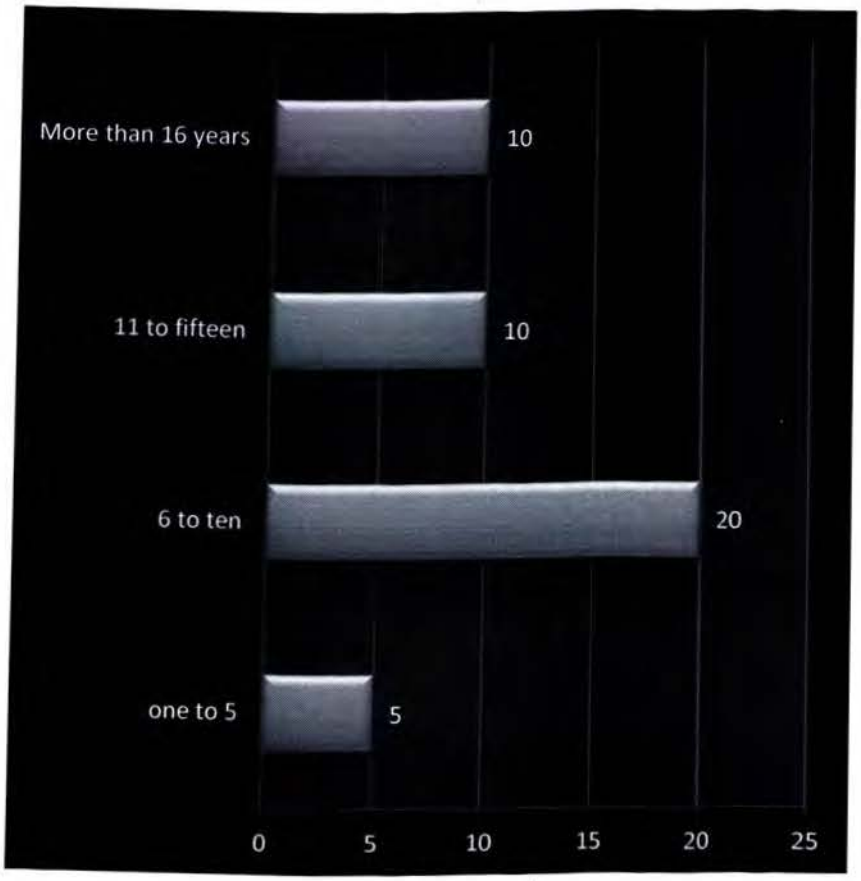
Of the total respondents as Figure 4.3 shows, 41 (91%) are South Africans, and 4 ((9%) originated from abroad. This means majority of respondents are familiar with how the ERP system is conducted in the South African context. This could be attributed to the Employment Equity Act, 55 of (1998) to employ individuals from disadvantaged groups in South Africa. The lack of qualified individuals on IT within the organisation could have contributed to the 9% that originated from abroad.

Figure 4.4 Qualification



Of the sample of 45 respondents as Figure 4.4 indicates, 30 (67%) have degrees, and 10 (22%) have postgraduate degree, white 5(11%) have a diploma. This indicates that the majority of employees that conduct ERP system are educated and qualified to conduct roles, which will be an advantage to SASSA. Further, it means that education cannot be used as a differentiating factor and employees need to have acquired the required level of education to occupy IT positions.

Figure 4.5 Years have you been working at SASSA

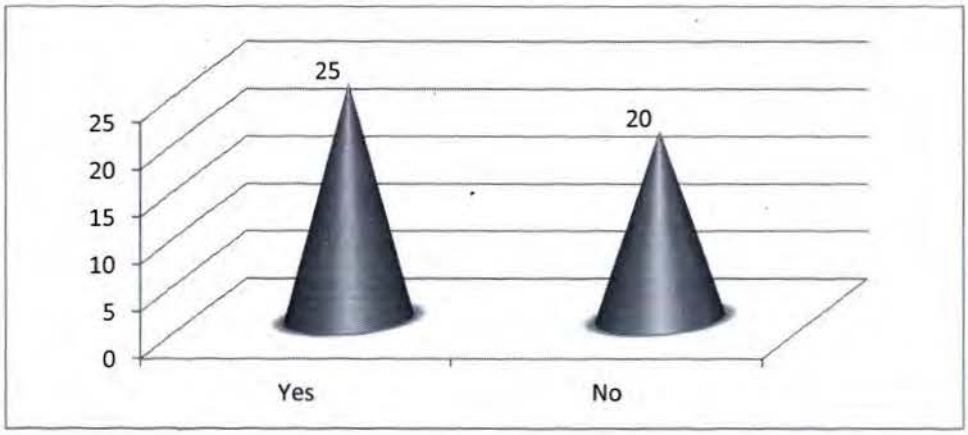


Of the respondents as indicated in Figure 4.5, 5 (11%) have between one and 5 years of service at SASSA, 20 (44%) have between 6 and 10 years of service at SASSA, 10 (22%) have between 11 and 15 years within SASSA, and 10 (22%) have more than 16 years of experience at SASSA. The figures indicate that the majority fell in the category of 6 to 10 years of service. This could be attributed to staff turnover within the organisation. Lesser experience may imply that SASSA employees have limited understanding of the impact of the implementation of the ERP system. Therefore, respondents may not provide a true reflection of the impact of the implementation of the ERP system at SASSA. These characteristics are supported by Babey (2006).

4.4 Results of the Investigation

All distributed questionnaires were returned. The data was summarised on a spreadsheet and the statistics were calculated using SPSS18. The researcher tried many times to show that she had met the requirements for the sample.She also acknowledged that, should somebody else want to use the results, they ,must first test the results to confirm the results because of the sample site.

Figure 4.6 ERP system reliable



Given the information presented on Figure 4.6, the variations in terms of ERP system reliability is slightly significant as, 25 (56%) respondents indicated that the ERP system is reliable. The 56 % of respondents could has resulted from exposure and experience in using ERP system within the organisation. Urban and Mashinini (2008:224) suggest that to implement ERP systems organisations are supposedly able to connect different divisions and functions together. Thus, many problems associated with using diverse legacy systems can be ameliorated, if not solved. ERP systems are believed to have had the most profound effect on an organisation compared with any other It because it is reliable.

Figure 4.7 Do you worry about data loss when you use the ERP system?

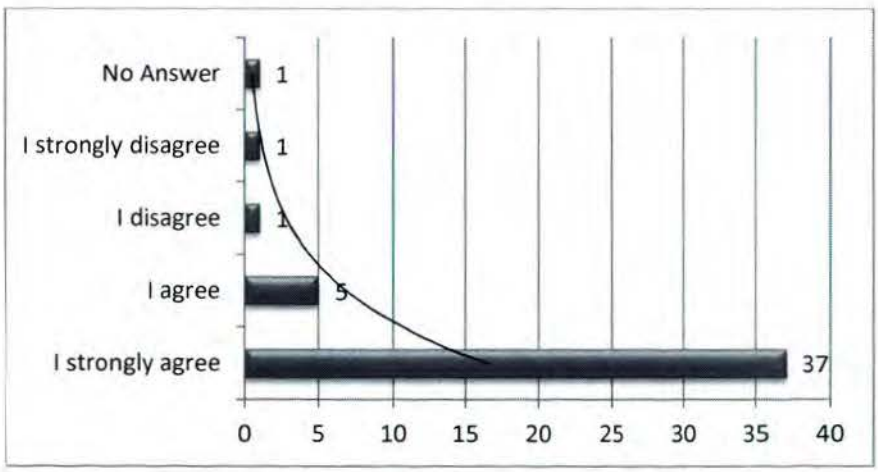


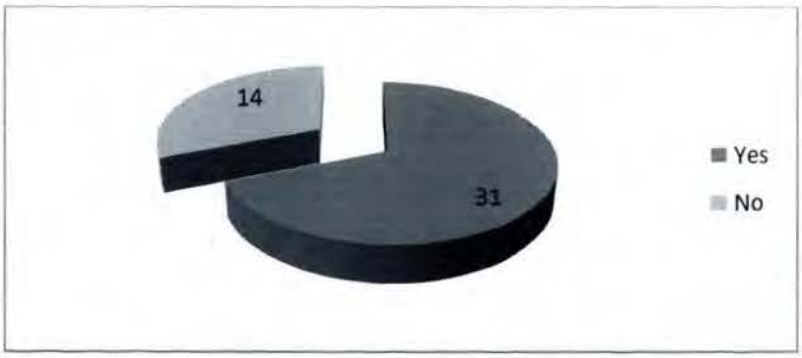
Figure 4.7 shows that 42 (93%) are worried about data loss when they use the ERP system. This implies that employees perceive the ERP system as not being able to handle data well, contrary to Figure 4.6 where most employees agreed to ERP system reliability. According to Dowlatshahi (2005:3746-3747), one of the challenges facing ERP providers is to develop comprehensive up to date and relevant technology solutions for companies seeking ERP systems. ERP software providers have been criticised by the end users for not having products that meet the needs of today's high-tech companies.

Table 4.1 Do you find systems errors when using the ERP system?

I strongly agree	**38**
I agree	**4**
I disagree	1
I strongly disagree	1
No Answer	1

Table 4.1 shows that 42 (94%) indicated that they find errors in the system when using ERP system and 2 (4%) indicated that they don't find system errors when using ERP system. This implies that employees have a feeling that data is incorrect. This is supported by Figure 4.7 that shows that they are worried about loss of data. Davenport (in Botta-Genoulaz and Millet. 2006:205) suggests that the ERP failure occurs for two reasons: the technical complexity of the solutions that requires a great deal of expertise, and mismatch between technical specifications of the system and the business requirements of the company. Wang *et al.* (2008) are in agreement that the problems with the implementation of ERP system occur for a number of reasons being data accuracy, and user involvement.

Figure 4.8 Usage of ERP is relevant



Most of the respondents considered the use of the ERP system relevant. The majority of them seem to understand the usage of ERP system as Figure 4.8 shows. Loh and Koh (2004:3438) regard that the implementation of ERP as being dependant on effective project management program use a clear business plan and vision, effective communication, strong ERP teamwork and composition, efficient change management programme, culture and monitoring and evaluation of performance.

Figure 4.9 Do you experience difficulty in exporting data from ERP systems?

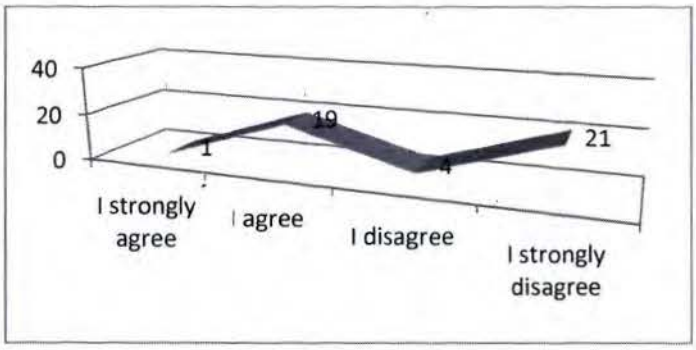
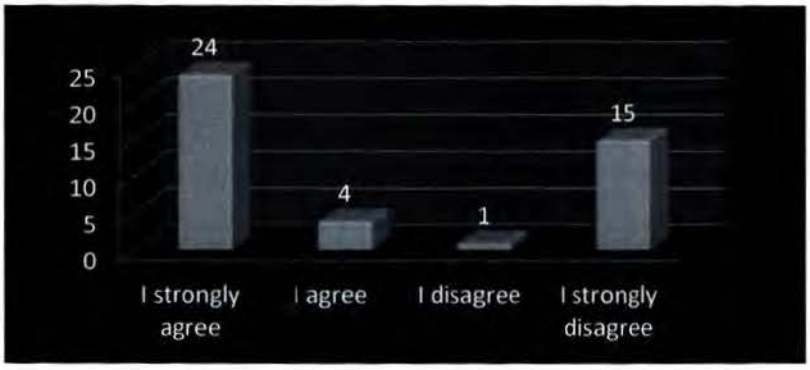


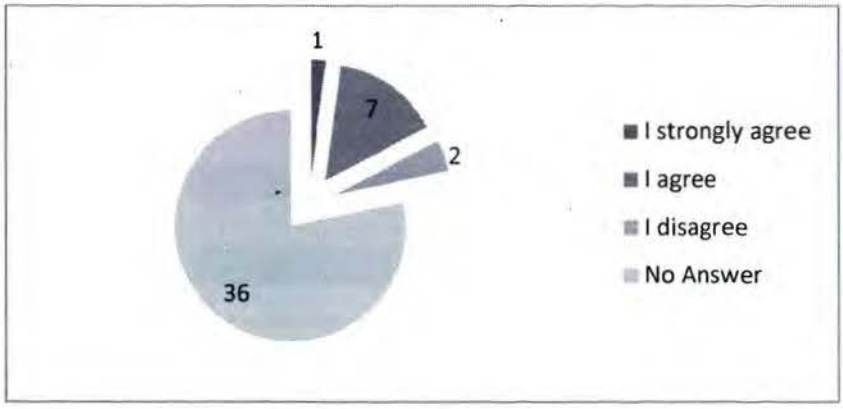
Table 4.9 shows that 20 (44%) respondents noted that they don't experience difficulty in exporting data from ERP system or software currently used. This implies that employees presume that the ERP system (or software currently used) is inadequate. In comparison with Table 4.1, this indicates that employees have challenges with ERP system or software currently being used. Tsai *et al.* (2010:480) state that over the past decade, the ERP systems have been implemented in many organisations worldwide. However, there were various obstacles that had to be overcome in the process of the successful implementation of an ERP system by any organisation. Botta-Genoulaz and Millet (2006:205) assert that some of the problems encountered with ERP implementations are related to the motivation for their adoption: legacy systems (poor data quality interfacing), understanding business processes, infrastructure requirements, customization of the new system.

Figure 4.10 Does ERP increase business value and productivity?



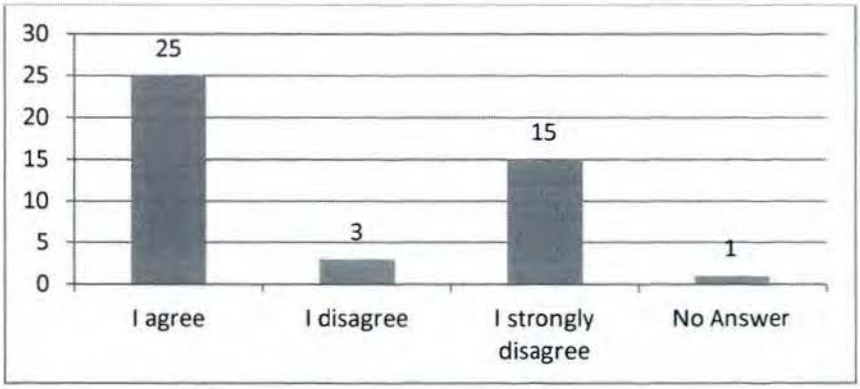
Most of the respondents presumed that the ERP increases the company business value and productivity. The negatives could be blamed on the lack of training or they could be experiencing problems with the ERP system. Chung *et al.* (2008:373) state that the benefits of ERP systems include coordinating processes and information, reducing carrying cost, decreasing cycle time, and improving responsiveness to customer needs if they are trained for it, Nicolaou (2004:79) highlights research indicating that successful adoption of IT to support business strategy can help organisations gain better business value performance.

Figure 4.11 Does the use of ERP system improve performance and productivity?



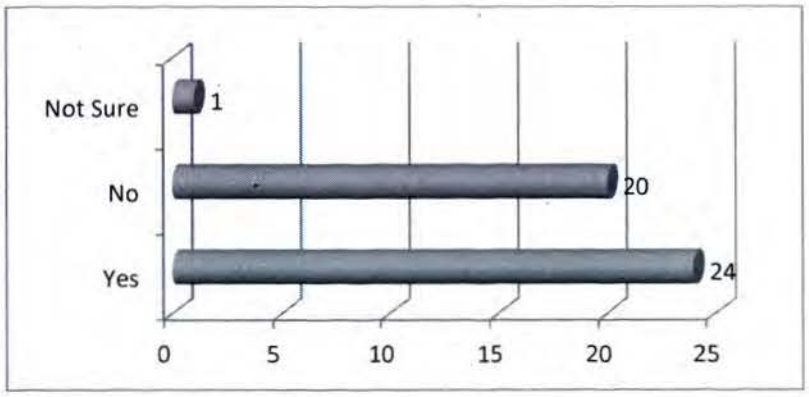
Given the information presented in Figure 4.11, the No response answer is significant because, 8 (18%) resondents indicated that the ERP system improves performance and productivity. This could be blamed on the fact that most of the respondents were not certain of their response. The response is contrary to Figure 4.10, where most respondents presumed that the ERP can help increase company business value and productivity. Urban and Mashinini (2008:225-226) believe that successful ERP implementation can provide real business benefit and sustained performance, whereas an unsuccessful implementation may have disastrous consequences.

Figure 4.12 Does the use of ERP improve effectiveness?



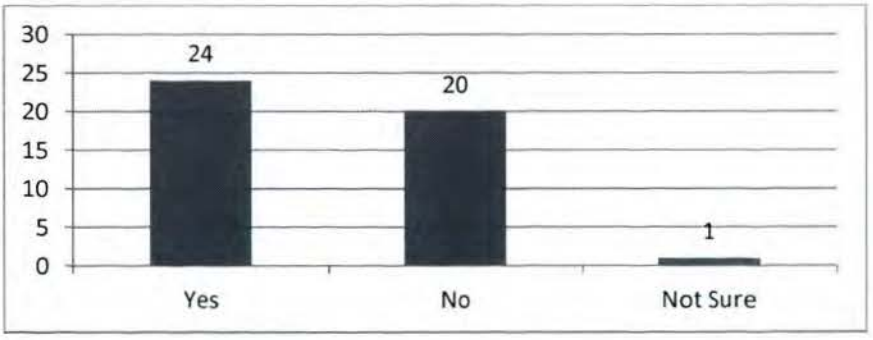
Most of the respondents assumed that ERP improves effectiveness as Figure 4.12 shows. The minority answers could be attributed to lack of experience in the use of ERP system. This implies that the respondents consider the use of ERP system effective. Dowlatshahi (2005:3745-3759) asserts that organisations have begun implementing ERP systems to improve the efficiency and decision making processes. The aim of the ERP system is to increase efficiency and profitability while simultaneously increasing the level of the control a company has over its entire operations. Urban and Mashinini (2008:223-228) suggest that one of the pillars of effective and efficient management is useable information for decision making.

Figure 4.13 Overall, using the ERP system is very useful in my job?



Given the information presented in Figure 4.13, the "Yes" response is significant. Out of the sample of 45 respondents, 24 (53%) indicated that the ERP system is very useful in their job. This implies that employees are certain about the benefits, efficiency and effectiveness of ERP in the organisation, and perceive itas being useful. Chung, *et al.* (2008:380) are of the opinion that the ERP system should be easy to use. A complex system decreases usefulness, which also makse users reluctant to work. To make the system easier, it should be carefully designed to be user friendly, considering screen design, user interface, page layout, help facilities and menus.

Figure 4.14 Interaction with the ERP system clear and understandable



Given the information presented in Figure 4.14 above and very similar to Figure 4.13, the Yes answer response is medium based. Out of the sample of 45 respondents, 24 (53%) indicated that the ERP system is clear and understandable. This implies that employees are not clear about ERP systems. The responses could be attributed to lack of training. Tsai et al. (2011) suggest that when users are trained to be familiar with the ERP systems, ERP implementation will improve. Nicolaou (2004:81-83) also beleives that ERP implementation is reported to be negatively affected by lack of understanding of the system by users, inadequate training and support for end users to understand the newly adopted business processes and workflows, inadequate system testing, and inadequate communication of system objectives .

Figure 4.15 Satisfied with the information quality of the ERP system

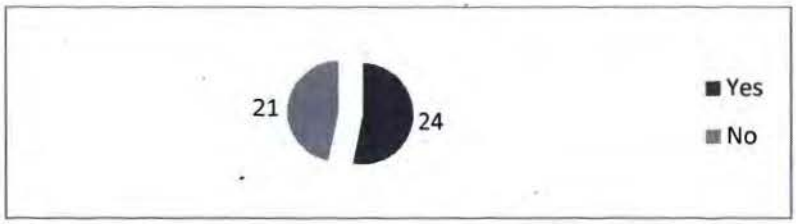
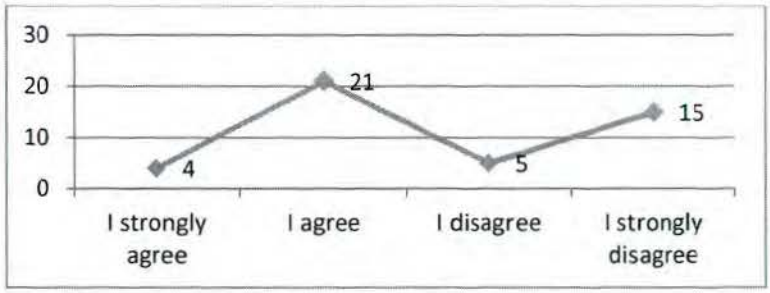


Figure 4.15 shows that 24 (53%) are not satisfied with the information retrieved from the ERP system. This suggests that employees are not happy with the information quality of the ERP system. This is contrary to Figure 4.6 where most of the employees perceived the ERP system reliable. This implies that the respondents are experiencing challenges with ERP system. Kansal (2006:165-170) state that in spite of growth in the ERP market, recent research shows growing dissatisfaction with ERP that they failed to deliver the anticipated benefits. The comprehensive nature of ERP software and the interaction among intra organisational and inter organisational users, creates a socio-technical system in which a large percentage of costs and benefits are well hidden or they emerge after ERP implementation, induced by the organisations and attempt to retain its competitive advantage by utilising and extending core ERP functionality (Kansal, 2006:165-170).

Figure 4.16 Was the ERP implementation completed on time?



Out of the sample of 45 respondents, majority presumed that the ERP implementation was completed on time. This implies that the majority consider the ERP implementation completion on scheduled time. Dowlatshahi (2005:3752-3759) asserts that the length of time required for the successful implementation of an ERP system ultimately varies, based on the needs of the end user. In reality, organisations should expect ERP implementation to take as long as 2 years. The time associated with ERP implementation varies greatly from one organisation to another due to barriers encountered. Bramorski (2009) is in agreement that ERP has the disadvantages of multiple difficulties that are hidden leading to "doubling the time and tripling the cost" estimates for the project.

Figure 4.17 Was the ERP implementation of the project completed within the budget as initially planned?

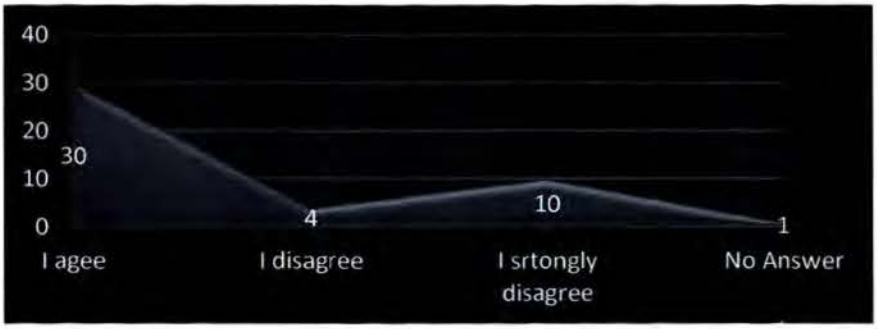
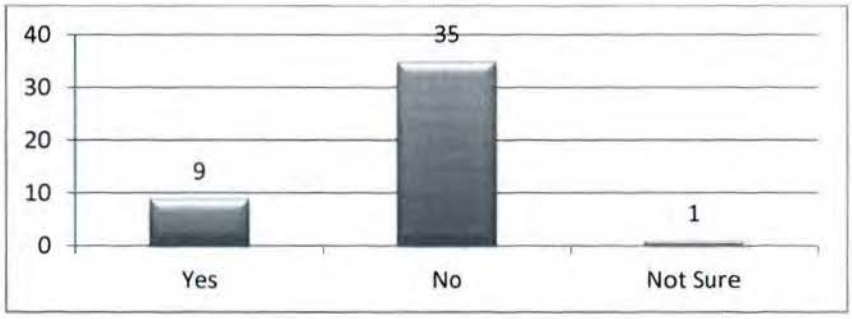


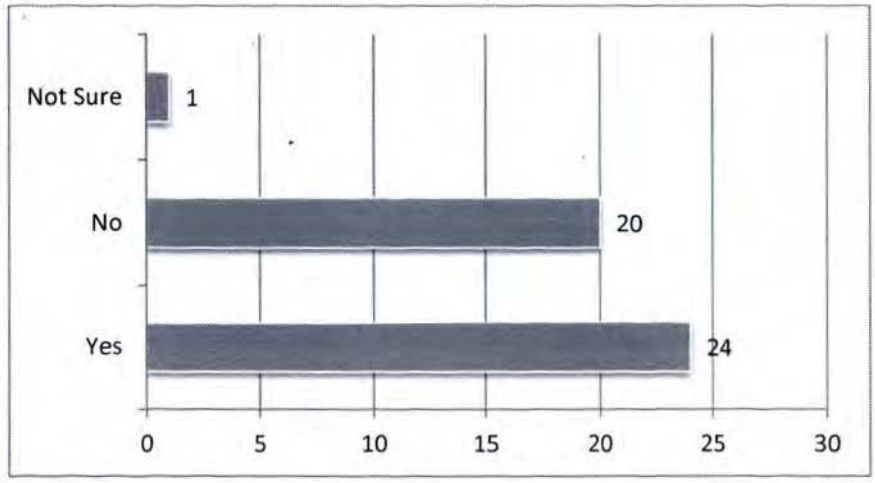
Figure 4.17 shows that 34 (76%) respondents assume that the ERP implementation project was completed within the budget. This implies that employees consider the ERP project as being completed within the planned budget. Babey (2006:24) states that a realistically developed and funded implementation budget that covers all components and aspects of the project ensures a smooth process and lessens some degree of stress that ERP implementation places on staff. In addition, an appropriate budget will minimise the surprises of unexpected costs and the abrupt search for funds to cover the cost.

Figure 4.18 Is the scope of your ERP system well matched with your company needs?



Given the information presented in Figure 4.18, the "No" answer response is highly significant. Out of the sample of 45 respondents, 35 (78%) are not in agreement. The negative respone of the majority of the respondents could be attributed to challenges experienced by the ERP system. Seymour and Roode (2008) highlight that, while companies worldwide have made substantial investment in installing the ERP systems, implementation has often proven to be unexpectedly difficult, and final benefits have been uncertain. Tsai *et al.* (2011:481) suggest that the successful implementation of an ERP system requires a strategic fit between the product and the organisation. The benefits of ERP depend on the clients operations, maintenance, and upgrading skills and knowledge, which can be learned, acquired and transferred from a consultant.

Figure 4.19 Do you think the consultant led your organisation in the right direction during the ERP implementation?



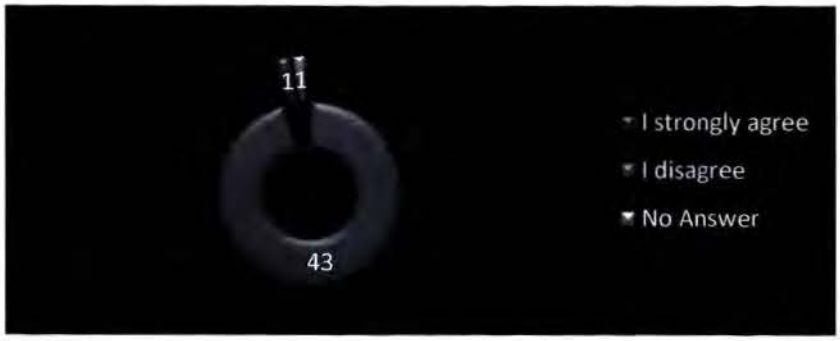
Most of the respondents argued that the consultant led the organisation in the right direction during the ERP implementation. This could be attributed to the fact that they were happy with the consultant during the ERP implementation. Tsai *et al.*, (2011:482) state that project management of ERP implementation is considered one of the important institutional factors that influence technology adoption in an organisation. Specifically, the role of project management in the successful ERP implementation is critical.

Table 4.2 Are the management reports from the ERP system very useful?

I strongly agree	14
I agree	20
I disagree	5
I strongly disagree	5
No Answer	1

Given the information presented in Table 4.2., 34 (76%) respondents indicated that the management reports from ERP system are very useful. This implies that employees are satisfied with the management reports from the ERP system, contrary to Figure 4.7 where employees were not satisfied with information quality of the ERP system. This could be attributed to the usefulness of management reports generated by the use of ERP system. Chung *et al.* (2008:380) agree that to make the ERP system more useful, the company should focus on enhancing the quality of output during its implementation, especially in the management and measurement reports.

Figure 4.20 Does the ERP system have more prestige?



Most of the respondents assumed that ERP has more prestige than others that do not. This implies that the majority of respondents perceive the ERP system as having benefits. Frolick (2003:43) states that ERP allows an organisation to gain competitive advantages by saving resources and responding to the ever changing business environment. Ideally, ERP eliminates redundant data entry and other inefficiencies that accompany departmentalised transaction processing schemes. Wu (2011: 6941) asserts that ERP implementation may result in competitive advantages in the innovative age, and has the potential to provide corporations with new competitive capabilities. This is based on the provision of real-time information that can improve the speed and precision of response.

Figure 4.21 Is the quality of the output from ERP high?

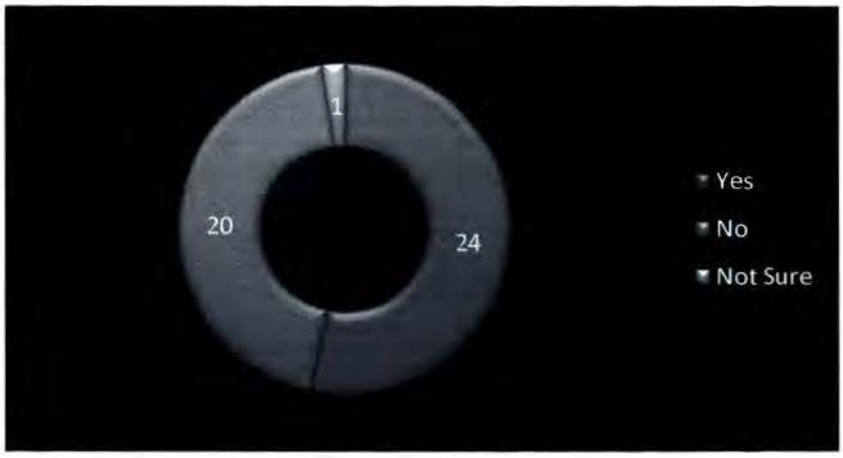


Figure 4.21 shows that 24 (53%) do not consider the quality of the output from ERP high. This implies that respondents are not satisfied with the quality of the output from ERP (Figure 4.7). This could be attributed to the lack of training of ERP or respondents are experiencing challenges with the ERP system. Chung *et al.* (2008:380) state that to make the ERP system more useful, the organisation should focus on enhancing the quality of output during its implementation.

4.5 Measures of association

Pearson correlation (hereafter called *correlation*) assumes that two variables are measured on at least interval scales and it determines the extent to which values of the two variables are proportional to each other. The value of correlation (i.e., correlation coefficient) does not depend on the specific measurement units used; for example, the correlation between height and weight will be identical regardless of whether inches and pounds, or centimetres and kilograms are used as measurement units. Proportional means linearly related, that is, the correlation is high if it can be summarised by a straight line (slopped upwards or downwards).

The correlation between the age and qualification is 0.873%. This suggests that that employee's age and qualifications in the organisation do have an impact on the ERP system use. If it is positive then if one increases the other one also increases. The chances are that a person will be older and in senior position is 0.873 and therefore it impacts on ERP decisions. The correlation between gender and years of experience is 0.914. This implies the male and older people have an impact on the ERP system implementation.

The correlation between qualification and the usage of ERP relevant is 0.936. This could be interpreted that qualified respondents are qualified and understand the use of ERP. The correlation between years of service and age is 0.873. This could be interpreted that the respondents who have adequate experience and enough experience may use ERP better. The correlation between years of service and ERP system reliability is 0.914. This could be interpreted that the respondents have adequate experience and support the ERP system.

The correlation between gender and years of experience is 1.000, a perfect correlation. This could be interpreted to that make respondents with enough experience understand the ERP system and perceive it as reliable. The years of experience are not a determinantof the ERP system. The correlation between worrying about data loss when using the ERP system and the finding of system errors is 0.863. This suggests that the respondents will be worried about data use and errors on the system.

The correlation between finding system errors when using the ERP system and citizenship is 0.815. This implies that finding system errors when using the ERP system and citizenship dohave an impact on the ERP system. The correlation between experiencing difficulty in exporting data from the ERP system or software and gender is 0.838. This suggests that the respondents do not understand the ERP system and may find it difficult. .The correlation between experiencing difficulty in exporting data from the ERP system or software and ERP

system reliability is 0.838, a strong positive correlation between the two variables. This suggests that although they struggle to do some commands they rely on it.

The correlations between the ERP systems improving performance and productivity and the worry about data loss when using the ERP system is 0.910, a strong positive correlation between the two variables. This implies that although the ERP system shows an improvement of performance, they worry about data loss because they do not trust the ERP system. The correlation between the usefulness of ERP and gender is 0.832. This suggests that male respondents find the ERP system useful but women don't trust it. The correlation between the usefulness of ERO and years of service is 0.811, a positive correlation between the two variables. This could be interpreted to mean that the respondents with many years of service and experience find the ERP system useful in their job. The correlation between the usefulness of the ERP system as reliability is 0.832. This suggests that the respondents acknowledge the importance and benefits of the ERP system. The correlation between interactions with the ERP system is clear and understandable and gender is 0.832. This could be interpreted to mean that the respondents understand the use of ERP and it does not impact on males.

The correlation between interactions with the ERP system is clear and understandable and years of service is 0.811. This suggests that senior respondents with many years of service do make an impact on the understanding of the ERP system. The correlation between interactions with the ERP system is clear and understandable and the ERP system is reliability, is 0.832. This could be interpreted to mean that the respondents understand the ERP system interaction and are convinced that it can be reliable. The correlation between satisfaction with the information quality of the ERP system and gender is 0.804. This suggests that male respondents are somehow satisfied with the information quality of the ERP systems. The correlation between satisfaction with the information quality of the ERP system and gender is 0.804. This could be interpreted to mean that male respondents are satisfied.

The correlation between the ERP implementation is completed on time and age is 0.804. This implies that older respondents are somehow satisfied with the ERP implementation.

The correlation between the ERP implementation is completed on time within the budget, and qualifications is 0.986. This could be interpreted to mean that the better qualified respondents are satisfied with the ERP project implementation. The correlation between the ERP implementation is completed on time with the budget and the use of ERP is relevant is 0.936. This suggests the respondents who are satisfied with the ERP project implementation and completion within the specified budget, find the ERP useful and relevant.

The correlation between the consultant leading the organisation in the right direction during ERP implementation and years of service is 0.811. This could be interpreted to mean that older respondents are satisfied with the consultant during the ERP project implementation. The correlation between the consultant leading the organisation in the right direction during the ERP implementation and the ERP system is reliability is 0.832. This could be interpreted to mean that the respondents are satisfied with the consultant during the ERP project implementation and this helped to place some value on the ERP system is reliability.

The correlation between the ERP systemimeans the citizenship is 0.861. This implies that the RSA respondents find the ERP system having more prestige. The correlation between the ERP system having more prestige and finding system errors when using ERP system is 0.906. This suggests that the respondents find the ERP system having more prestige and probably experience system errors. The coefficient between the quality of the output from the ERP and gender is 0.832. This suggests that male respondents find the quality of ERP high. The coefficient between the quality of the output from the ERP and years of service is 0.811. This could be interpreted to mean that experienced respondents find the quality of ERP high. The coefficient between the quality of the output from ERP and ERP system reliability is 0.832. This could be interpreted that respondents find the quality of ERP high and the system reliable.

The correlation between gender and the experience of difficulty in exporting data from the ERP system or software currently used is 0.838. This suggests that male respondents experience little difficulty with the ERP system or software currently used. The coefficient between gender and the usefulness of ERP in the job is 0.832.This implies that the male respondents find the ERP useful and adding value in their job. The coefficient between gender and the interaction of the ERP system being clear and understandable is 0.832. This suggests that male respondents have knowledge and understanding of how the ERP system operates. The coefficient between gender and satisfaction with the information quality of the ERP system is 0.804. This could be interpreted to mean that male respondents are satisfied with the quality of the ERP system.

The correlation between qualifications and the ERP implementation project completion within budget as initially planned is 0.986. This suggests that the respondents are satisfied with the ERP project implementation. The coefficient between years of experience and the usefulness of ERP on the job is 0.811. This could be interpreted to mean that more experienced respondents find the ERP useful in their job, and years of experience does not have impact. The coefficient between years of service and the interaction of the ERP system being clear

and understandable is 0.811. This suggests that more experienced respondents have been trained on how they use the ERP system and understand it. The correlation between system reliability and experience of difficulty in exporting data from the ERP system or software currently used is 0.838. This implies that the respondents find the system reliable.

The correlation between system reliability and the usefulness of the ERP system in the job is 0.832. This could be interpreted to mean that the respondents find the ERP system effective and useful in their job. The correlation between system reliability and interaction with ERP system being clear and understandable is 0.832. This also could be interpreted to mean that the respondents know how to use and understand the ERP system. The correlation between system reliability and satisfaction with the information quality of ERP system is 0.804. This suggests that the respondents are satisfied with the ERP system and information quality. The correlation between the worry about data loss when using ERP, and the ERP system is improvement of performance and productivity is 0.910. This suggests that although they worry about data use they assume that it will improve work.

The correlation between the ERP relevance and the ERP project implementation being compled within budgetary time is (initially planned) is 0.936.

This implies that the respondents presume that the usage of the ERP is relevant because the project implementation was completed within the planned budget. The correlation between the increase in the company business value and productivity and the use of ERP improving effectiveness is 0.966. This could be interpreted to mean that the respondents perceive the ERP system as adding value to the business and increasing productivity and effectiveness. The correlation between the increase in the company business value and productivity and use of the ERP system being useful in the job is 0.866. This suggests that the respondents presume the ERP system to help increase the business value and usefunessl in the job.

The correlation between the increase in the company business value and productivity and satisfaction with the information quality of the ERP system is 0.924. This suggests that the respondents are satisfied with the ERP information quality and ERP to be increasing business value and productivity. The correlation between ERP improving effectiveness and the ERP usefulness in the job is 0.904. This suggests that the respondents presume the ERP being useful and valuable in their job, thus improving effectiveness. The correlation between the use of ERP improving effectiveness and interaction with ERP system being clear and understandable is also 0.904. This could be interpreted to mean that the respondents that were trained to use the system assume it is the ERP system being effective, clear and understandable.

The correlation between the use of ERP improving effectiveness and satisfaction with the information quality of the ERP system is 0.904. This could be interpreted to mean that many respondents are satisfied with the information quality and ERP effectiveness. The correlation between the usefulness of the ERP system in the job and the interaction with ERP system being clear and understandable is 1.000, a complete positive correlation. This suggests that respondents understand the ERP system and can interact with their job.

The correlation between the usefulness of the ERP system and the satisfaction with information quality of the ERP system is 0.950. This could be interpreted to mean that the respondents are satisfied with the information quality and find the ERP system useful in their job. The correlation between satisfaction with the information quality of the ERP and the ERP increase of the company business value and productivity is 0.932. This could be interpreted that the respondents are satisfied with the information quality and presume ERP to be increasing the business value and productivity.

The correlation between the consultant leading the organisation in the right direction, and the ERP increase of the company value and productivity is 0.866. This could be interpreted that the respondents are satisfied with the consultant and ERP implementation, and assume the ERP as shows useful and adding business value. The correlation between the consultant leading the organisation in the right direction and the use of the ERP system improving effectiveness is 0.908. This suggests that the respondents are satisfied with the consultant and assume the ERP system as effective. The correlation between the consultant leading the organisation in the right direction during the ERP implementation, and the ERP system being useful in the job is 1.000. This could be interpreted to mean that the respondents are satisfied with the consultant and presume the ERP system as useful.

The correlation between the consultant leading the organisation in the right direction during the ERP implementation and satisfaction with information quality is 0.950. This could be interpreted to mean that the respondents are satisfied with the consultant and the quality of ERP system information. The correlation between the quality of the output from the ERP being high and the ERP increase of the company business value and productivity is 0.866. This suggests that the respondents are satisfied with the quality of the output fromthe ERP system and increase in the business value and productivity. The correlation between the quality of the output from the ERP being high and the usefulness of the ERP system in the job is 1.000. This could be interpreted to mean that trained respondents assume the ERP system output to be beneficial and useful.

The correlation between the quality of the output from the ERP being high, and interaction with the ERP system being clear and understandable is 1.000. This suggests that the respondents are knowledgeable about the output of the ERP system.

The correlation between age and the consultant leading the organisation in the right direction is -0.740. This implies that younger respondents may impact the ERP system implementation. The correlation between age and the quality of the output from the ERP being high is -0.740. This implies that younger users may question the quality of the output from the ERP system.

The correlation between gender and the consultant leading the organisation in the right direction during the ERP implementation is -0.832. This implies that females may question the impact of the consultant leading the organisation in the right direction. The correlation between gender and the quality of the output of the ERP system being high is -0.832. This implies that gender has an impact on the ERP system quality.

The correlation between citizenship and the ERP having more prestige than those who do not have is 0.861. This implies that citizenship has an impact on the ERP system and South Africans may accept it more readily. The correlation between years of service and the thinking of the consultant having led the organisation in right direction is -0.811. This implies that the novices doubt ERP on this has an impact on the ERP. The correlation between years of service and the quality of the output from the ERP system being high is -0.811. This implies that novices doubt the quality of the output of the ERP system.

The correlation between the ERP system reliability and the consultant having led the organisation in the right direction during the ERP implementation is -0.832. This could be interpreted to mean that the respondents think the reliability is impacted upon by the direction provided by the consultant during the ERP implementation. The correlation between the ERP system reliability and the quality of the output from the ERP system being high is -0.832. This could be interpreted to mean that novice respondents assume thaaat the ERP system is unreliable and not producing high quality. The correlation between the finding of system errors when using the ERP system and the ERP system having more prestige is 0.906. This suggests that the respondents find errors with the ERP system and but note is more prestigious.

The correlation between the use of the ERP system improving effectiveness and the consultant having led the organisation in the right direction during the ERP implementation is 0.904. This suggests that the respondents derive some benefits from the ERP system provided the consultant made the right decision.

The correlation between the use of the ERP system improving effectiveness and the quality of the output from the ERP being high is 0.904. This could be interpreted to mean that the respondents perceive the ERP system as improving the effectiveness and quality of output. The correlation between the usefulness of the ERP system in the job and the consultant having led the organisation in the right direction is 1.000. This could be interpreted to mean that the respondents find the ERP system useful. .

4.6 Conclusion

In this chapter, the detailed results of the research using statistical method have been provided. Tables, graphs and stats have been used to present analyse the results of the survey. The aim of the data analysis is to understand the various elements through the inspection of the relationship between concepts, constructs or variables to establish whether there are any patterns or trends that can be identified. It is interesting to note that the literature has been confirmed by the responses from the research tools.

The analysis of the results revealed that age, level of education and years of experience are not determinants of whether respondents are positive or negative about the impact of the implementation of the ERP system at SASSA North West Regional Office. The findings have highlighted some of the issues raised in the debate regarding the challenges of ERP implementation. The findings have also established a link between literature that was reviewed in this study with the data which was collected and presented. The study used a quantitative approach to describe and analyse the findings of the impact of the implementation of the ERP system at SASSA North West Regional Office. This was followed by the findings and measures of association statistics.

The next chapter consolidates all the work done and comprises the summary of the study, findings per research question and gap areas, provide ERP system opportunities and future research opportunity. Conclusion of the study is drawn and recommendations are outlined.

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CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

Loh and Kohn (2004:3435) assert that despite the extensive research on improving the success rate of ERP implementation, projects fail to achieve their corporate goals. The high failure rate of ERP implementation calls for a better understanding of its critical elements that constitute a successful ERP implementation.

The purpose of this research was to determine the extent of the implementation of the ERP system in SASSA North West Regional Office, identifiying and analysing critical factors to be considered in ensuring successful ERP system implementation.

The study provided an outline of the implementation of the ERP system in terms of definitions, effectiveness and efficiency, ERP benefits, challenges of ERP, change management, ERP implementation, cost of ERP and ERP success factors.

This chapter consolidates the findings of the research derived from the analysis and interpretation of statistical data, discussed in the previous section. The research questions pertaining to the ERP system its relevance to the job, the benefits and usefulness of ERP, and the ERP project progress and success quality within the organisation are answered.

This chapter comprises a summary of the study, findings per research question, ERP system benefits and implementation guidelines, and highlights of future research opportunity in this field of study. The conclusion of the study is drawn and recommendations are be outlined.

5.2 Summary of the Study

She and Thuraisingham (2007:152) define an ERP system as an integrated, configurable and tailored information system which plans and manages all the resources and their use in the enterprise, and streamlines and incorporates the business processes within and across the functional or technical boundaries in the organisation.

Bramha (2009) defines ERP as a framework for organising, defining, and standardising the business processes necessary to effectively plan and control an organisation so that the organisation can use its internal knowledge to seek external advantage. The impact the implementation of the ERP system in SASSA North West Regional Office is currently unknown. The research was aimed at determining how employees perceive the ERP system, reliability and relevance, usefulness of ERP system and how employees regard the ERP

project progress and success quality. The study analysed the ERP system implementation and how it is perceived by SASSA employees.

The study also revealed that there was deficiency in the ERP system and that most of the respondents were worried about data loss when they used the system and they indicated that they found system errors in using ERP system. Majority of the respondents experiences difficulty in exporting data from the ERP system and were not satisfied with the quality of output from the ERP system,

5.3 Response to Research Questions

The main findings of this research in relation to each research question are now be discussed. Each question is followed by a discussion of the findings relating to that question.

5.3.1To what extent is the ERP system reliable and relevant to the job within the organisation?

Nicolaou (2004:79) asserts that research indicated that successful adoption of IT to support business strategy can help organisations gain financial performance. A recent wave of ERP system adoptions promised businesses the ability to incorporate information needs of all function areas into a single system that captures event data relating to operational and information needs of all business processes. It was found as in Figure 4.6 that the most frequent response to the ERP system reliability was that the respondents assumed the ERP system to be reliable and relevant to their job within the organisation. It was found, as Figure 4.7 that the most frequent responses to the worry of data loss when using ERP system were that most of the respondents are worried about data loss when they use the system. It was also found as in Table 4.1, that 94% of respondents indicated that they found system errors when using the ERP system. This is contrary to Figure 4.6 in which the respondents found the system reliable but were worried about data loss when using the system.

It was also found in as Table 4.3, that the correlation between experiencing difficulty in exporting data from the ERP system or software and worrying about data loss when using the ERP system is-0.079. An important finding in Figure 4.8 was that the majority of respondents regarded the ERP system as being relevant. Furthermore, in Figure 4.9 it was shown that most of the respondents experienced difficulty in exporting data from the ERP system.

This implies that the respondents regard the ERP system or software currently being used as inadequate. The research concluded that respondents are not satisfied as they experience challenges with the ERP system. SASSA management should explore an opportunity to

ensure that the respondents are trained to be familiar with the system and improve the ERP system is reliability in reducing possible system errors. Dowlatshahi (2005:3753-3754) states that ERP systems similar to other new technologies in and organisation require training for employees to be able to use them correctly and effectively.

ERP training has been considered as the most important element in the success of the ERP implementation. If employees do not know how to effectively use the ERP system, the overall success of the system will be diminished. Organisations must adequately train all ERP users ERP training can be the important element in the successful implementation. Furthermore, Dowlatshahi highlights that the effective use of an ERP system depends upon proper participation and implementation from all departments of the organisation.

The effectiveness of the ERP system design and implementation is affected by employee's acceptability, top management leadership and support, and the fit of ERP with the organisation culture (Dowlatshahi, 2005:3756-3759).

5.3.2 To what extent are the benefits and perceived usefulness of the ERP within the organisation?

In order for an ERP system to become effective for organisations, massive changes must occur because an ERP system strives to increase efficiency, often resulting in a new mode of operation or utilisation of resources (Dowlatshahi, 2005:3752). It was found as in Figure 4.10, that most of the respondents assume that as ERP system increases the organisation business value and productivity. It was also shown as in Figure 4.11, that most respondents did not answer the question relating to the ERP system improving performance and productivity.

In Figure 4.12, most of the respondents assumed that the ERP system improved effectiveness. An important finding in Figure 4.13 is that most of the respondents indicated that ERP is very useful in their job. In Figure 4.14 most of the respondents feel that the interaction with ERP is clear and understandable. Another important finding in Figure 4.15 indicates that 53% are not satisfied with the quality of the ERP system. This is contrary to Figure 4.6 where respondents find the ERP system reliable. This implies that the respondents experience problems with the ERP system. In addition, it was found as in Table 4.3 that the correlation between the ERP system reliability and the quality of the output from ERP system being high is -0.832.

Lastly, it was found as shown in Figure 4.20 that most of the respondents assume that the ERP system is more prestigeous. It was also found as in Appendix D, that the correlation between the ERP system reliability and the ERP system having more prestige than those who

do not is -0.306, a negative correlation. This suggests that the respondents doubt the ERP system's reliability and do not think that it has more prestige than others.

The research concludes that respondents are satisfied with the benefits and usefulness of the ERP system. However, management should explore any opportunity to increase satisfaction with the quality of the ERP system. Frolick (2003:44-45) indicates that most of ERP pitfalls relate to the implementation and organisation itself, and can usually be avoided. Without proper planning and organisation, an ERP project is sure to fail. ERP software is worthless without the people to implement, use, and maintain its functionality (Frolick, 2003:44-45).

5.3.3 To what extent is the ERP project progress and success quality within the organisation considered useful?

Tsai *et al.* (2011:482) assert that project management of ERP implementation is considered one of the important institutional factors that influence technology adoption in an organisation. Specifically, the role of project management in the successful ERP implementation is critical.

It was found, as indicated in Figure 4.16, that most of the respondents assumed that the ERP implementation was completed on time. This implies that employees may have insufficient knowledge of the ERP project implementation process.

It was found, as shown in Table 4.,3 that the correlation between the ERP system reliability and the consultant having led the organisation in the right direction during ERP implementation is -0.832.

An analysis in Figure 4.17 indicates that 76% of the respondents felt that the ERP implementation project was completed within the budget as initially planned. An important analysis in Figure 4.18 found that 78% of the respondents were not in agreement that ERP is well matched with company needs. Kansal (2006:165-170) highlights that in spite of growth in the ERP market, recent research shows growing dissatisfaction with ERP that they often fail to deliver the anticipated benefits.

It was also found, as Figure 4.19, that most of the respondents assumed that the consultant led the organisation in the right direction during ERP implementation. An analysis in Table 4.2 found that the majority indicated that the management reports from the ERP system and being very useful. Furthermore, it was found, in Figure 4.21, that 53% of the respondents do not

consider the quality of the output from ERP being high. This implies that the employees are not happy with the quality of the output from ERP system.

It was also found (Appendix D) that the correlation between the ERP system improving performance and productivity and the management report from ERP system being useful is -0.764. The correlation between the ERP system reliability and the quality of the output from ERP system being high is -0.832.

The research concludes that respondents are satisfied with the project progress but unhappy with the success quality. The Management should explore the opportunity to match ERP with company needs and improve the quality of the output of the ERP system. According to Jones *et al.* (2006:412), a successful ERP implementation requires organisation group to break the barriers of knowledge sharing.

ERP systems integrate business processes across functions and units, thereby creating a divergence in the required knowledge of organisational members. Davenport (in Botta-Genoulaz and Mille,t 2006:205), attributes that the ERP failure occurrence to two reasons: the technical complexity of the solutions that require a great deal of expertise, and mismatch between technical specifications of the system and the business requirements of the company.

5. 4 Managerial Guidelines

For the results of this study the following guidelines are given to SASSA in relation to successful ERP implementation in the future. On the discussion of effectiveness and efficiency in Section 2.3, Figure 4.15 and Figure 4.15, the majority of respondents are not satisfied with the quality of ERP system. They do not consider the quality of the output from ERP being high. The organisation should explore an opportunity to ensure the participation of employees in all departments, to provide an opportunity of ensuring employee's ERP system acceptability. Boyle (2007:267-268) notes that ERP systems have an impact on organisations, examples of the impact of ERP systems include forcing organisations; to adopt a process view of business activities and undergoing business process re-engineering and valuing stream mapping activities.

Nicolaou (2004:79) highlights that research indicate that the successful adoption of IT to support business strategy can help organisations gain superior financial performance. A recent wave of ERP system adoptions promise businesses the ability to incorporate information needs of all function areas into a single system that captures event data relating to operational and information needs of all business processes (Nicolaou, 2004:79). In order for an ERP

system to become effective for many companies, changes must occur because an ERP system strive to increase efficiency, often resulting in a new mode of operation or utilisation of resources (Dowlatshahi, 2005:3752). Newlin (2006:36) asserts that the production is a standard measure often used to asses organisational performance. The basic productivity equation is output divided by input and is the backbone of all productivity measurement and principles.

Dowlatshahi (2005:3759) provides that the effectiveness of ERP system design and implementation is affected by employee's acceptability, top management leadership and support, and the fit of ERP with the organisation culture. Furthermore, Dowlatshahi asserts that organisations have begun implementing ERP systems to improve the efficiency and decision making processes. The chief aim of the ERP system is to increase efficiency and profitability while simultaneously increasing the level of control a company has over its entire operations. The effective use of an ERP system depends upon proper participation and implementation from all departments of the organisation (Dowlatshahi, 2005:3759).

On the discussion of ERP benefits in Section 2.5 and Figure 4.7, the majority of respondents worried about data loss when using an ERP system. The organisation should explore an opportunity to address the ERP technical complexity and business requirements of the company. Faulty technology is often blamed, but eight out of nine times ERP problems are performance related (Motwani *et al.*, 2005:530). Botta-Genoulaz and Millet (2006:205) state that some of the problems encountered with ERP implementation are related to motivation for their adoption: legacy systems (poor data quality interfacing), understanding business processes, infrastructure requirements, customization of new system. Urban and Mashinini (2008:225-228), argue that despite the wide spread adoption of ERP systems and corresponding benefits, many ERPs fail and face implementation difficulties because of workers resistance to adapt to change. According to Dowlatshahi (2005:3746-3747) one of the challenges facing ERP providers is to develop comprehensive up to date and relevant technology solutions for companies seeking ERP systems . ERP software providers have been criticised by the end users for not having products that meet the needs of today's high-tech companies. The technological advances provide challenges for software houses to stay relevant and up to date. Dowlatshahi (2005:3753-3754) asserts that the ERP systems similar to other new technologies in an organisation require training for employees to be able to use them correctly and effectively. ERP training has been considered as the most important element in the success story of ERP implementation. If employees do not know how to effectively use the ERP system, the overall success of the system will be diminished.

Organisations must make every attempt to adequately train all ERP users as ERP training can be the most important element in the successful implementation (Dowlatshahi, 2005:3753-3754).

On the discussion of ERP implementation in Section 2.7, and Figure 4.18, 78 % of respondents are not in agreement that ERP is well matched with company needs. The organisation should explore an opportunity to facilitate the accomplishment of a substantial proportion of the ERP potential benefits. Frolick (2003:44-45) asserts that most of the ERP pitfalls relate directly to the implementation and organisation itself, and can usually be avoided. Without proper planning and organisation, anyERP project is sure to fail. ERP software is worthless without the people to implement, use, and maintain its functionality (Frolick, 2003:44-45). According to Jones *et al.* (2006:412), a successful ERP implementation requires organisation group to break the barriers of knowledge sharing. ERP systems integrate business processes across functions and units, thereby creating a divergence in the required knowledge of organisational members.

ERP implementation is considered successful if it facilitates the accomplishment of a substantial proportion of its potential benefits, which may include: personnel reductions, a decrease in the cost of information technology, better inventory control, and identifiable level of return on investment (ROI), and/or an improvement in order and cash management.(Wang *et al.* 2008:1611). An ERP system is a highly integrated enterprise information system helping to manage all aspects of an enterprise's business operations, including production, purchasing engineering design, manufacturing, sales, marketing, distribution, accounting and customer service, better production scheduling and reduced manufacturing costs (Wu, 2011: 6941).

On the discussion of ERP success factors in Section 2.9, and Table 4.1, 94 % of respondents are finding system errors when using the ERP system. The organisation should explore an opportunity to evaluate the ERP against a set key performance indicators and critical factors in ERP projects. Tsai *et al.* (2011:482) argue that project management of ERP implementation is considered one of the most important institutional factors that influence technology adoption in an organisation. Specifically, the role of project management in the successful ERP implementation is critical. Wang *et al.* (2008:1611) assert that ERP implementation is considered successful if it facilitates the accomplishment of a substantial proportion of its potential benefits, which may include: personnel reductions, a decrease in the cost of information technology, better inventory control, and identifiable level of return on

investment (ROI), and /or an improvement in order and cash management (Wang *et al.* 2008:1611).

5.5 Future Research

This study contributes various opportunities for further research. ERP presents an important phenomenon to be studied, notably:

- The evaluation and the investigation of the critical success factors in research models.
- Developing a model for ERP change implementation by empirically testing variables.

5.6 Conclusion

ERP implementation is viewed as a crucial solution for corporations aiming to meet increased competitive pressures and globalisation (Wu, 2011:6946). A successful ERP can be the backbone of business intelligence for an organisation, giving management a unified view of its processes. Unfortunately, ERP's have a reputation for costing a lot of money and providing meager results, because the people who are expected to use the application do not know what it is or how it works. When ERP fails, it is usually because the company did not dedicate enough time or money to training and managing culture change issues. Faulty technology is often blamed, but eight out of nine times ERP problems are performance related (Motwani *et al.*, 2005:530).

The findings of this study provide a point of departure for ERP system, the impact of the implementation of ERP system in SASSA North West Regional Office. The study has highlighted ERP system challenges as experienced by employees.

The study indicates that the ERP system implementation can process classified under five major types: there is deficiency in the ERP system; employees are worried about data loss when they use the system, they find system errors when using the ERP system they experience difficulty in exporting data from ERP system, and are not satisfied with the quality of output from the ERP system. Results highlight the need for SASSA management to explore the opportunity to ensure that the employees are trained to be familiar with the system, improve the ERP system reliability and reduce possible system errors.

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Appendix A: Matrix

Themes	Definition of ERP	Effectiveness and Effeciency of ERP	Benefit of ERP	Challenges of ERP	Change Management	ERP Implementation	Cost of ERP	Success factors	
An Information Technology Risk Assessment		1	1	1		1	1	1	
A case study of Enterprise Resource Planning Implementation Issues Presentation,		1	1	1		1		1	
Enterprise Resource Planning failure		1		1		1	1	1	
Security for Enterprise Resource Planning Systems	1		1	1		1			
Strategic Success Factors in Enterprise Resource Planning Design and Implementation		1	1	1		1		1	
Cost of Enterprise Resource Planning System Implementation – and Then Som	1			1		1	1	1	
An Imperial Study of the Performance of Enterprise Resource Planning Systems using the Organisational Learning Model	1	1	1			1		1	
Investigating Affective Response and Job impact with Enterprise Resource Planning adoption				1	1				
Evaluating the Business Process Reengineering of a SAP R/3 Implementation in a Manufacturing Environment					1	1	1	1	
Effect of Enterprise Resource Planning Implementation on Organisational Productivity	1	1	1		1	1	1	1	
Enterprise Resource Planning System Implementation: Investigating the	1	1	1	1	1	1		1	

process of change									
Technical-Oriented Enterprise Resource Planning Body of Knowledge for Information Systems Programmes: Contents and Implementation		1				1		1	
Analysing Enterprise Resource Planning Systems Success Factors in the Engineering –Construction Industry		1	1	1		1		1	
Enterprise Resource Planning Implementation			1	1		1		1	
Firm Performance Effects in Relation to the Implementation and Use of Enterprise Resource Planning Systems		1	1	1	1	1		1	
Embedded Audit Modules in Enterprise Resource Planning Systems : Implementation and Functionality			1	1					
The process of Enterprise Resource Planning Implementation and Business Process Reengineering	1	1		1	1			1	
A proposed Framework for Evaluating Generic Enterprise Models		1	1					1	
Introducing Enterprise Resource Planning - Points to Ponder		1	1		1				
Critical Elements for a successful ERP implementation in small and medium sized enterprises		1	1	1	1	1		1	
ERP implementation Failure : A Case study		1	1	1		1		1	
An Information Technology Risk Assessment : Case study of ERP systems				1		1		1	
The critical Success Factors for ERP implementation ; An organisational fit perspective									
A balanced scorecard based on framework for assessing the strategic		1	1	1	1	1			

impacts of ERP systems									
The impact of enterprise systems on corporate performance			1			1			
Impact of cultural difference : A case study of ERP introduction in China			1	1		1	1		
ERP systems adoption : An exploratory study of the Organisational Factors and Impacts of ERP success		1	1	1	1	1		1	
ERP plans and decision-support benefits			1			1	1		
A critique of ERP systems in healthcare				1		1			
ERP systems implementation : Best practice in Canadian government organisation			1	1		1		1	
A balance scorecard based for assessing the strategic impacts of ERP systems			1	1		1		1	
Emperial study on influence of critical success factors on ERP knowledge management on management performance in high tech industries		1						1	
A learning curve model for analysing and managing consulting cost		1	1	1			1		
Organisational culture and leadership in ERP implementation			1	1		1		1	
ERP systems and its implications for operations function		1							
Organisational adoption of ERP planning systems : A conceptual framework		1	1	1		1	1	1	
Components reuse based agile reconfiguration for ERP systems in manufacturing enterprises					1	1			
Business process oriented design of ERP systems for small and medium enterprises			1	1		1	1		

The Role of Information Systems Resource in ERP Capability Building and Business Process Outcomes		1		1		1	1	1	
Understanding the Role of ERP implementation	1				1	1			
A system Approach to ERP Systems			1			1			
Measuring the Impact of ERP systems of Eranings Management		1	1	1		1	1	1	
An Auditing Approach for ERP Examining Human Factors that Influence ERP User satisfaction			1			1			
ERP : Development and directions for operations management research			1			1	1		
Examining the critical success factors in the adoption of ERP		1	1	1		1		1	
The consistency among facilitating factors and ERP implementation success : A holistic view						1		1	
National difference and ERP implementation : issues and challenges				1		1			
A framework of ERP system implementation success in China : An empirical study	1				1	1			
Critical factors for successful ERP implementation				1		1		1	
ERP - A brief history	1					1			
Interpreting ERP implementation project from a stakeholder perspective				1	1	1			
An investigation into the use of ERP systems in the service sector	1	1		1		1		1	
Segmenting and mining the ERP user's benefits using the rough set approach			1		1	1	1	1	
The demand for training and consultancy investment in SME-specific ERP systems implementation			1		1	1		1	

and operation									
A multicriteria approach for risk assessment in ERP maintained	1					1			
Exploring knowledge sharing in ERP implementation : An organisational culture framework		1	1	1		1	1	1	
An empirical investigation of the impacts of internal/external facilitators on the project's success of ERP : A structural equation model		1		1		1		1	
ERP implementation the traps				1	1		1		
Risk in ERP implementation					1	1			
ERP - implementation is the challenge	1	1				1	1		
	12	**28**	**34**	**36**	**18**	**50**	**17**	**34**	

Appendix B Table of Construction

Research Questions	Survey Questions	Variable(s) and or Relationships measured	Statistical Test
▪ To what extent is the ERP system reliable and relevant to the job within the organization?	1.SYSTEM RELIABILITY AND JOB RELEVANCE 1.1 Is ERP system reliable?	Ordinal/Nominal Variables 1.1 Yes/No	Descriptive stats-frequency tables, bar charts Convert nominal to ration 0,1,2,3,4 & do correlation co-efficient testing with personal information – Pearson & Spearman Rho
	1.2 Do you worry about data loss when you use the ERP system?		
	1.3 Do you find system errors when using ERP system?	1.2 Not within scope , poorly, fairly, mostly, completely	Numerical description location ,spread, distribution, cross tabulation
	1.4 Is the usage of ERP relevant?	1.3 Not within scope, poorly, fairly, mostly, completely	Measures of association, Phi, Crammers V
	1.5 Do you experience difficulty in exporting data from ERP systems to other systems or software currently used?	1.4 Yes/No	Convert nominal to ration 0,1,2,3,4 & do correlation co-efficient testing with personal information – Pearson & Spearman Rho Normal & distribution

		1.5 Not within scope, poorly, fairly ,mostly, completely	
▪ To what extent are the ERP functions and internal support within the organisation considered useful?	2.ERP FUNCTION AND INTERNAL SUPPORT 2.1 Does ERP increase the company business value and productivity? 2.2 Does the use of ERP system improve performance and productivity? 2.3 Does the use of ERP improve effectiveness? 2.4 Overall, using the ERP system is very useful in my job? 2.5 Is interaction with the ERP system clear and understandable? 2.6 Are you satisfied with the information quality of the ERP system?	Ordinal/Nominal Variables 2.1 Yes/No 2.2 Not within scope ,poorly ,fairly, mostly, completely 2.3 Not within scope, poorly, fairly, mostly, completely 2.4 Not within scope, poorly, fairly, mostly, completely 2.5 Yes/No	Descriptive stats-frequency tables, bar charts Numerical description location ,spread, distribution, cross tabulation Measures of association, Phi, Crammers V Convert nominal to ration 0,1,2,3,4 & do correlation co-efficient testing with personal information – Pearson & Spearman Rho Normal & distribution Normal & distribution

		2.6 Yes/No 2.7 Yes/No	Normal & distribution
• To what extent are the benefits and perceived usefulness of ERP within the organsation rated posivitely?	3.ERP BENEFITS AND PERCEIVED USEFULNESS 3.5 Does ERP systems have more prestige from those that do not? 3.6 Does ERP increase the company business value and productivity? 3.7 Does the use of ERP system improve performance and productivity? 3.8 Does the use of ERP improve effectiveness? 3.9 Overall, using the ERP system is very useful in my job? 3.10 Is interaction with the ERP system clear and understandable?	Ordinal/Nominal Variables 2.8 Not within scope, poorly, fairly, mostly, completely 2.9 Not within scope, poorly, fairly, mostly, completely 2.10Not within scope, poorly, fairly, mostly, completely	Descriptive stats-frequency tables, bar charts Convert nominal to ration 0,1,2,3,4 & do correlation co-efficient testing with personal information – Pearson & Spearman Rho Convert nominal to ration 0,1,2,3,4 & do correlation co-efficient testing with personal information – Pearson & Spearman Rho Convert nominal to ration 0,1,2,3,4 & do correlation co-efficient testing with personal information – Pearson & Spearman Rho Convert nominal to ration 0,1,2,3,4 & do correlation co-efficient testing with

	3.11 Are you satisfied with the information quality of the ERP system?	2.11 Not within scope, poorly, fairly, mostly, completely 3.1 Yes/No 3.2 Yes/No 3.3 Yes/No	personal information – Pearson & Spearman Rho Normal & distribution Normal & distribution Normal & distribution
• To what extent is the ERP project progress and success quality within the organisation useful?	4. PROJECT SUCCESS/PROGRESS AND SUCCESS QUALITY 4.1 Was the ERP implementation completde on time? 4.2 Was the ERP implementation project completed within the budget as initially planned? 4.3 Is the scope of your ERP system well matched with our company needs?	Ordinal/Nominal Variables 2.12 Not within scope, poorly, fairly, mostly, completely 2.13 Not within scope, poorly, fairly, mostly, completely 4.1 Yes/No	Descriptive stats-frequency tables, bar charts Numerical description location ,spread, distribution, cross tabulation Measures of association, Phi, Crammers V Normal & distribution

	4.4 Do you think the consultant led you in the right direction during the ERP implementation?	4.2 Yes/No	Normal & distribution
	4.5 Are the management reports from ERP systems very useful?	2.14Not within scope, poorly, fairly, mostly, completely	Numerical description location ,spread, distribution, cross tabulation
	4.6 Is the quality of the output from ERP high?	4.3 Yes/No	Normal & distribution

APPENDIX C: CORRELATION

Table 4.3 Correlation

		Age	Gender	Citizenship	Qualification	Years	Qu1	Qu2	Qu3	Qu4
Age	Correlation Coefficient	1.000	.773**	-.445**	-.672**	.873**	.773**	-.659**	-.557**	-.713**
	Sig. (2-tailed)	.	.000	.002	.000	.000	.000	.000	.000	.000
	N	46	46	46	46	46	46	46	46	46
Gender	Correlation Coefficient	.773**	1.000	-.271	-.600**	.914**	1.000**	-.401**	-.339*	-.641**
	Sig. (2-tailed)	.000	.	.069	.000	.000	.	.006	.021	.000
	N	46	46	46	46	46	46	46	46	46
Citizenship	Correlation Coefficient	-.445**	-.271	1.000	.295*	-.507**	-.271	.722**	.815**	.423**
	Sig. (2-tailed)	.002	.069	.	.046	.000	.069	.000	.000	.003
	N	46	46	46	46	46	46	46	46	46
Qualification	Correlation Coefficient	-.672**	-.600**	.295*	1.000	-.597**	-.600**	.547**	.412**	.936**
	Sig. (2-tailed)	.000	.000	.046	.	.000	.000	.000	.004	.000
	N	46	46	46	46	46	46	46	46	46
Years	Correlation Coefficient	.873**	.914**	-.507**	-.597**	1.000	.914**	-.584**	-.571**	-.677**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000	.000	.000
	N	46	46	46	46	46	46	46	46	46
Qu 1	Correlation Coefficient	.773**	1.000**	-.271	-.600**	.914**	1.000	-.401**	-.339*	-.641**
	Sig. (2-tailed)	.000	.	.069	.000	.000	.	.006	.021	.000
	N	46	46	46	46	46	46	46	46	46
Qu2	Correlation Coefficient	-.659**	-.401**	.722**	.547**	-.584**	-.401**	1.000	.863**	.625**
	Sig. (2-tailed)	.000	.006	.000	.000	.000	.006	.	.000	.000
	N	46	46	46	46	46	46	46	46	46
Qu3	Correlation Coefficient	-.557**	-.339*	.815**	.412**	-.571**	-.339*	.863**	1.000	.529**
	Sig. (2-tailed)	.000	.021	.000	.004	.000	.021	.000	.	.000
	N	46	46	46	46	46	46	46	46	46
Qu4	Correlation Coefficient	-.713**	-.641**	.423**	.936**	-.677**	-.641**	.625**	.529**	1.000
	Sig. (2-tailed)	.000	.000	.003	.000	.000	.000	.000	.000	.
	N	46	46	46	46	46	46	46	46	46
Qu5	Correlation Coefficient	.554**	.838**	.125	-.491**	.647**	.838**	-.079	.040	-.472**
	Sig. (2-tailed)	.000	.000	.408	.001	.000	.000	.603	.790	.001
	N	46	46	46	46	46	46	46	46	46
Qu6	Correlation Coefficient	-.650**	-.743**	.131	.757**	-.658**	-.743**	.374*	.268	.773**
	Sig. (2-tailed)	.000	.000	.387	.000	.000	.000	.010	.072	.000
	N	46	46	46	46	46	46	46	46	46

Qu7	Correlation Coefficient	.755**	.459**	-.630**	-.670**	.603**	.459**	-.910**	-.777**	-.717**
	Sig. (2-tailed)	.000	.001	.000	.000	.000	.001	.000	.000	.000
	N	46	46	46	46	46	46	46	46	46
Qu8	Correlation Coefficient	-.679**	-.749**	.237	.757**	-.707**	-.749**	.442**	.354*	.795**
	Sig. (2-tailed)	.000	.000	.112	.000	.000	.000	.002	.016	.000
	N	46	46	46	46	46	46	46	46	46
Qu9	Correlation Coefficient	-.740**	-.832**	.379**	.712**	-.811**	-.832**	.511**	.448**	.767**
	Sig. (2-tailed)	.000	.000	.009	.000	.000	.000	.000	.002	.000
	N	46	46	46	46	46	46	46	46	46
Qu10	Correlation Coefficient	-.740**	-.832**	.379**	.712**	-.811**	-.832**	.511**	.448**	.767**
	Sig. (2-tailed)	.000	.000	.009	.000	.000	.000	.000	.002	.000
	N	46	46	46	46	46	46	46	46	46
Qu11	Correlation Coefficient	-.726**	-.804**	.337*	.746**	-.778**	-.804**	.498**	.422**	.797**
	Sig. (2-tailed)	.000	.000	.022	.000	.000	.000	.000	.004	.000
	N	46	46	46	46	46	46	46	46	46
Qu12	Correlation Coefficient	-.231	-.570**	.244	.115	-.546**	-.570**	.058	.267	.208
	Sig. (2-tailed)	.123	.000	.102	.449	.000	.000	.701	.073	.166
	N	46	46	46	46	46	46	46	46	46
Qu13	Correlation Coefficient	-.684**	-.599**	.369*	.986**	-.617**	-.599**	.588**	.470**	.936**
	Sig. (2-tailed)	.000	.000	.012	.000	.000	.000	.000	.001	.000
	N	46	46	46	46	46	46	46	46	46
Qu14	Correlation Coefficient	.607**	.369*	-.268	-.578**	.423**	.369*	-.626**	-.456**	-.576**
	Sig. (2-tailed)	.000	.012	.072	.000	.003	.012	.000	.001	.000
	N	46	46	46	46	46	46	46	46	46
Qu15	Correlation Coefficient	-.740**	-.832**	.379**	.712**	-.811**	-.832**	.511**	.448**	.767**
	Sig. (2-tailed)	.000	.000	.009	.000	.000	.000	.000	.002	.000
	N	46	46	46	46	46	46	46	46	46
Qu16	Correlation Coefficient	-.339*	.107	.391**	.383**	-.056	.107	.644**	.514**	.369*
	Sig. (2-tailed)	.021	.477	.007	.009	.712	.477	.000	.000	.012
	N	46	46	46	46	46	46	46	46	46
Qu17	Correlation Coefficient	-.503**	-.306*	.861**	.334*	-.573**	-.306*	.791**	.906**	.478**
	Sig. (2-tailed)	.000	.039	.000	.023	.000	.039	.000	.000	.001
	N	46	46	46	46	46	46	46	46	46
Qu18	Correlation Coefficient	-.740**	-.832**	.379**	.712**	-.811**	-.832**	.511**	.448**	.767**
	Sig. (2-tailed)	.000	.000	.009	.000	.000	.000	.000	.002	.000
	N	46	46	46	46	46	46	46	46	46

Table 4.3b Correlation

		Qu5	Qu6	Qu7	Qu8	Qu9	Qu10	Qu11	Qu12	Qu13	Qu14
Age	Correlation Coefficient	.554**	-.650**	.755**	-.679**	-.740**	-.740**	-.726**	-.231	-.684**	.607**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.123	.000	.000
	N	46	46	46	46	46	46	46	46	46	46
Gender	Correlation Coefficient	.838**	-.743**	.459**	-.749**	-.832**	-.832**	-.804**	-.570**	-.599**	.369*
	Sig. (2-tailed)	.000	.000	.001	.000	.000	.000	.000	.000	.000	.012
	N	46	46	46	46	46	46	46	46	46	46
Citizens hip	Correlation Coefficient	.125	.131	-.630**	.237	.379**	.379**	.337*	.244	.369*	-.268
	Sig. (2-tailed)	.408	.387	.000	.112	.009	.009	.022	.102	.012	.072
	N	46	46	46	46	46	46	46	46	46	46
Qualific ation	Correlation Coefficient	-.491**	.757**	-.670**	.757**	.712**	.712**	.746**	.115	.986**	-.578**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	.000	.449	.000	.000
	N	46	46	46	46	46	46	46	46	46	46
Years	Correlation Coefficient	.647**	-.658**	.603**	-.707**	-.811**	-.811**	-.778**	-.546**	-.617**	.423**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.003
	N	46	46	46	46	46	46	46	46	46	46
Qu 1	Correlation Coefficient	.838**	-.743**	.459**	-.749**	-.832**	-.832**	-.804**	-.570**	-.599**	.369*
	Sig. (2-tailed)	.000	.000	.001	.000	.000	.000	.000	.000	.000	.012
	N	46	46	46	46	46	46	46	46	46	46
Qu2	Correlation Coefficient	-.079	.374*	-.910**	.442**	.511**	.511**	.498**	.058	.588**	-.626**
	Sig. (2-tailed)	.603	.010	.000	.002	.000	.000	.000	.701	.000	.000
	N	46	46	46	46	46	46	46	46	46	46
Qu3	Correlation Coefficient	.040	.268	-.777**	.354*	.448**	.448**	.422**	.267	.470**	-.456**
	Sig. (2-tailed)	.790	.072	.000	.016	.002	.002	.004	.073	.001	.001
	N	46	46	46	46	46	46	46	46	46	46
Qu4	Correlation Coefficient	-.472**	.773**	-.717**	.795**	.767**	.767**	.797**	.208	.936**	-.576**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	.000	.166	.000	.000
	N	46	46	46	46	46	46	46	46	46	46
Qu5	Correlation Coefficient	1.000	-.718**	.168	-.620**	-.671**	-.671**	-.687**	-.448**	-.425**	.374*
	Sig. (2-tailed)	.	.000	.266	.000	.000	.000	.000	.002	.003	.011
	N	46	46	46	46	46	46	46	46	46	46
Qu6	Correlation Coefficient	-.718**	1.000	-.476**	.966**	.866**	.866**	.924**	.375*	.739**	-.439**
	Sig. (2-tailed)	.000	.	.001	.000	.000	.000	.000	.010	.000	.002
	N	46	46	46	46	46	46	46	46	46	46
Qu7	Correlation Coefficient	.168	-.476**	1.000	-.541**	-.579**	-.579**	-.571**	.096	-.706**	.749**
	Sig. (2-tailed)	.266	.001	.	.000	.000	.000	.000	.525	.000	.000
	N	46	46	46	46	46	46	46	46	46	46
Qu8	Correlation Coefficient	-.620**	.966**	-.541**	1.000	.904**	.904**	.932**	.425**	.776**	-.347*
	Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000	.003	.000	.018
	N	46	46	46	46	46	46	46	46	46	46
Qu9	Correlation Coefficient	-.671**	.866**	-.579**	.904**	1.000	1.000**	.950**	.538**	.734**	-.377**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.	.000	.000	.000	.010
	N	46	46	46	46	46	46	46	46	46	46

Qu10	Correlation Coefficient	-.671**	.866**	-.579**	.904**	1.000**	1.000	.950**	.538**	.734**	-.377**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.	.000	.000	.000	.010
	N	46	46	46	46	46	46	46	46	46	46
Qu11	Correlation Coefficient	-.687**	.924**	-.571**	.932**	.950**	.950**	1.000	.464**	.746**	-.459**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.	.001	.000	.001
	N	46	46	46	46	46	46	46	46	46	46
Qu12	Correlation Coefficient	-.448**	.375*	.096	.425**	.538**	.538**	.464**	1.000	.157	.313*
	Sig. (2-tailed)	.002	.010	.525	.003	.000	.000	.001	.	.298	.034
	N	46	46	46	46	46	46	46	46	46	46
Qu13	Correlation Coefficient	-.425**	.739**	-.706**	.776**	.734**	.734**	.746**	.157	1.000	-.499**
	Sig. (2-tailed)	.003	.000	.000	.000	.000	.000	.000	.298	.	.000
	N	46	46	46	46	46	46	46	46	46	46
Qu14	Correlation Coefficient	.374*	-.439**	.749**	-.347*	-.377**	-.377**	-.459**	.313*	-.499**	1.000
	Sig. (2-tailed)	.011	.002	.000	.018	.010	.010	.001	.034	.000	.
	N	46	46	46	46	46	46	46	46	46	46
Qu15	Correlation Coefficient	-.671**	.866**	-.579**	.904**	1.000**	1.000**	.950**	.538**	.734**	-.377**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.	.000	.000	.000	.010
	N	46	46	46	46	46	46	46	46	46	46
Qu16	Correlation Coefficient	.305*	.036	-.764**	.073	.026	.026	.059	-.631**	.401**	-.637**
	Sig. (2-tailed)	.039	.810	.000	.629	.863	.863	.698	.000	.006	.000
	N	46	46	46	46	46	46	46	46	46	46
Qu17	Correlation Coefficient	.104	.164	-.704**	.301*	.411**	.411**	.381**	.250	.396**	-.384**
	Sig. (2-tailed)	.491	.277	.000	.042	.005	.005	.009	.094	.007	.008
	N	46	46	46	46	46	46	46	46	46	46
Qu18	Correlation Coefficient	-.671**	.866**	-.579**	.904**	1.000**	1.000**	.950**	.538**	.734**	-.377**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.	.000	.000	.000	.010
	N	46	46	46	46	46	46	46	46	46	46

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.3c: Correlation

		Qu15	Qu16	Qu17	Qu18
Age	Correlation Coefficient	-.740**	-.339*	-.503**	-.740**
	Sig. (2-tailed)	.000	.021	.000	.000
	N	46	46	46	46
Gender	Correlation Coefficient	-.832**	.107	-.306*	-.832**
	Sig. (2-tailed)	.000	.477	.039	.000
	N	46	46	46	46
Citizenship	Correlation Coefficient	.379**	.391**	.861**	.379**
	Sig. (2-tailed)	.009	.007	.000	.009
	N	46	46	46	46
Qualification	Correlation Coefficient	.712**	.383**	.334*	.712**
	Sig. (2-tailed)	.000	.009	.023	.000
	N	46	46	46	46
Years	Correlation Coefficient	-.811**	-.056	-.573**	-.811**
	Sig. (2-tailed)	.000	.712	.000	.000
	N	46	46	46	46
Qu 1	Correlation Coefficient	-.832**	.107	-.306*	-.832**

	Sig. (2-tailed)	.000	.477	.039	.000
	N	46	46	46	46
Qu2	Correlation Coefficient	.511**	.644**	.791**	.511**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	46	46	46	46
Qu3	Correlation Coefficient	.448**	.514**	.906**	.448**
	Sig. (2-tailed)	.002	.000	.000	.002
	N	46	46	46	46
Qu4	Correlation Coefficient	.767**	.369*	.478**	.767**
	Sig. (2-tailed)	.000	.012	.001	.000
	N	46	46	46	46
Qu5	Correlation Coefficient	-.671**	.305*	.104	-.671**
	Sig. (2-tailed)	.000	.039	.491	.000
	N	46	46	46	46
Qu6	Correlation Coefficient	.866**	.036	.164	.866**
	Sig. (2-tailed)	.000	.810	.277	.000
	N	46	46	46	46
Qu7	Correlation Coefficient	-.579**	-.764**	-.704**	-.579**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	46	46	46	46
Qu8	Correlation Coefficient	.904**	.073	.301*	.904**
	Sig. (2-tailed)	.000	.629	.042	.000
	N	46	46	46	46
Qu9	Correlation Coefficient	1.000**	.026	.411**	1.000**
	Sig. (2-tailed)	.	.863	.005	.
	N	46	46	46	46
Qu10	Correlation Coefficient	1.000**	.026	.411**	1.000**
	Sig. (2-tailed)	.	.863	.005	.
	N	46	46	46	46
Qu11	Correlation Coefficient	.950**	.059	.381**	.950**
	Sig. (2-tailed)	.000	.698	.009	.000
	N	46	46	46	46
Qu12	Correlation Coefficient	.538**	-.631**	.250	.538**
	Sig. (2-tailed)	.000	.000	.094	.000
	N	46	46	46	46
Qu13	Correlation Coefficient	.734**	.401**	.396**	.734**
	Sig. (2-tailed)	.000	.006	.007	.000
	N	46	46	46	46
Qu14	Correlation Coefficient	-.377**	-.637**	-.384**	-.377**
	Sig. (2-tailed)	.010	.000	.008	.010
	N	46	46	46	46
Qu15	Correlation Coefficient	1.000	.026	.411**	1.000**
	Sig. (2-tailed)	.	.863	.005	.
	N	46	46	46	46
Qu16	Correlation Coefficient	.026	1.000	.442**	.026
	Sig. (2-tailed)	.863	.	.002	.863
	N	46	46	46	46
Qu17	Correlation Coefficient	.411**	.442**	1.000	.411**
	Sig. (2-tailed)	.005	.002	.	.005
	N	46	46	46	46
Qu18	Correlation Coefficient	1.000**	.026	.411**	1.000
	Sig. (2-tailed)	.	.863	.005	.
	N	46	46	46	46

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).