

UNIVERSITY OF KWAZULU-NATAL

**EFFICACY OF HYBRID ENTERPRISE RESOURCE PLANNING AT SABMILLER,
PROSPECTON BREWERY IN KWAZULU-NATAL: THE END-USERS'
PERSPECTIVES**

By

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DECLARATION

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ABSTRACT

The implementation of an Enterprise Resource Planning (ERP) system assists a company to integrate all business activities thereby creating cohesiveness and efficiency. The ERP system enhances communication and sharing of information. The system is installed into the companies' computer network infrastructure. The aim of this study was to investigate the efficacy of the hybrid ERP system at SABMILLER (Prospecton Brewery) in KwaZulu-Natal. The quantitative method to collect data was utilized. A closed-end questionnaire was designed using the Likert scale of rating. The target population identified for this study was the brewery's manufacturing systems end-users. The total number of users in the target population was 337 from which 201 was the sample frame. However, the breweries management eventually only allowed for 31 questionnaires to be distributed which does not allow for the results of this study to be generalised to the larger population. However, there was a 100% response from the selected sample. The findings revealed that after embedding Infor's ERP (APS), particularly supply chain related problems improved drastically. A collective majority of 90.3% of the respondents indicated that interdepartmental systems integration improved significantly, whilst a further 83.9% agreed that there was an increase in the integration of all business activities. Ninety six point five percent (96.5%) of the respondents agreed that the inventory planning improved, 93.5% indicated that there was an improvement in materials resource planning, whilst 90.3% of the respondents agreed that the implementation of hybrid ERP software improved the brewery's manufacturing systems efficiency. In addition, a collective majority of 96.8% of the respondents agreed that optimum manufacturing systems back-up had since been attained. Practical recommendations from the findings include the fact that it is essential for top management to ensure that the project leader has a list of roles and responsibilities which is critical to the success of any ERP system implementation. The project leader must ensure that vendor support is at an optimal level as required by the brewery, that training is on-going, and that there is constant feedback from end-users regarding any challenges that they may face. The challenges should be dealt with immediately, hence ensuring the efficacy of the hybrid ERP system.

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LIST OF ACRONYMS

| | |
|-------|---|
| APS | : Advanced Planning and Scheduling |
| BPR | : Business Process Re-engineering |
| BSC | : Balanced Scorecard |
| CRM | : Customer Relationship Management |
| CSF | : Critical Success Factors |
| ERP | : Enterprise Resource planning |
| HR | : Human Resource |
| HRM | : Human Resource Management |
| IT | : Information Technology |
| IS | : Information Systems |
| MES | : Manufacturing Execution Systems |
| MRP | : Materials Resource Planning |
| PLCs | : Programmable Logic Controllers |
| ROP | : Reorder Point System |
| SaaS | : Software as a Service |
| SAP | : Systems Application Product |
| SCADA | : Supervisory Control and Data Acquisition |
| SCM | : Supply Chain Management |
| SLAs | : Service Level Agreements |
| SPSS | : Statistical Programme for Social Sciences |

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Technology evolution impacts on all business manufacturing processes and is important in increasing a company's ability to either produce or render better services. In addition a company needs to offer a product or service in the right place, at the right time and at a lower cost in order to remain competitive. The Enterprise Resource Planning (ERP) initiative is for many companies a large Information Technology (IT) investment that radically reshapes the entire IT landscape. Companies are turning to ERP solutions as a need that responds to the demand of the customer namely speed and accuracy. This chapter presents a background to the study, the aim, the research objectives and questions and the significance of the study.

1.2 Problem Statement

SAMBILLER adopted ERP Systems Applications Products (SAP) in the year 2000 in all its breweries (Figure 1.1).

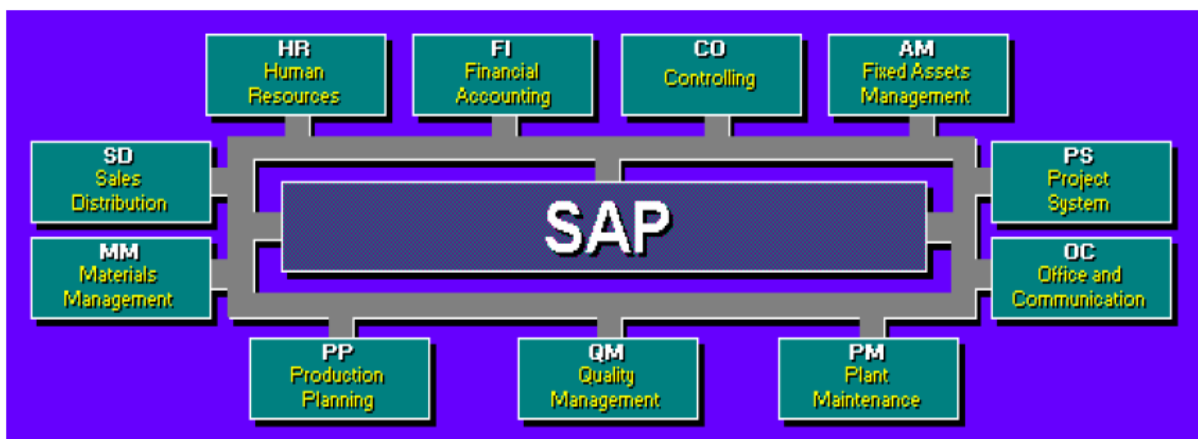


Figure 1.1: Basic ERP SAP modules

Source: Pieterse (2010)

The demand for SABMILLER's product grew (in the year 2000) from the production capacity of 120 000 hectolitres per week to (220 000) hectolitres per week (in the year 2010) (SABMILLER, 2010). According to van Schoor (Automation Manager of SABMILLER), even though the company already had the ERP SAP solution in place, it could only meet 54% of its inventory plans in the year 2010 (van Schoor, 2011). Complaints from customers increased due to the demand of the product not being met (van Schoor, 2011).

In order to address the challenge of complaining customers, the implementation of appropriate IT platforms and tools were essential. Infor's Advanced Planning and Scheduling (APS) which is another ERP vendor was then ultimately selected to address the planning issues of the supply chain. Three modules namely demand planning, advance scheduling (detailed scheduling) and advanced planning (tactical manufacturing and inventory planning) were embedded into SAP (original ERP vendor) in order to optimise the brewery's existing manufacturing systems (Van Schoor, 2011). Hence the joining of SAP and Infor's APS brought about the hybrid ERP system at SABMILLER (Figure 1.2).

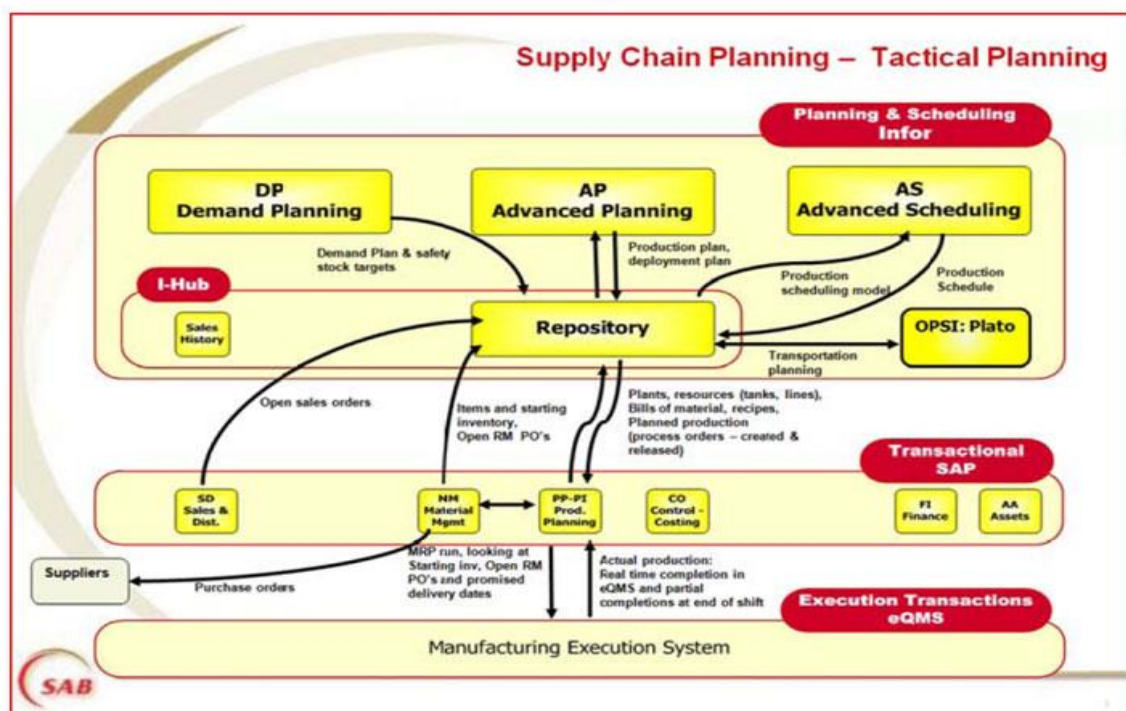


Figure 1.2: Infor's (APS) ERP embedded supply chain modules

Source: Van Schoor (2011)

The embedding of the three modules onto the ERP system was to ensure speed, flexibility and interoperability to the already existent system. The company's 'self-contained' islands systems have been operating as per Annexure E. However, with the adoption of Infor's APS ERP modules the company wanted its manufacturing system to function more effectively and efficiently ideally as per Annexure F. This study therefore seeks to investigate the end-users' perspectives of the efficacy of hybrid ERP system at SABMILLER (Prospecton Brewery).

1.3 Background to the Study

SABMILLER is one of the world's giant beer breweries with many subsidiaries across all six continents of the globe (SABMILLER, 2014). There are seven breweries in South Africa. The focus of this study was on SABMILLER's Prospecton Durban branch brewery which supplies eight brands of beer for the coastal region of South African breweries. In the year 1984 the SABMILLER (Prospecton Brewery) was automated with Programmable Logic Controllers (PLCs) (SABMILLER, 2009). This system installation was configured in such a way that it divided the plant into five operating and control areas namely Brew House, Utilities, Fermentation, Filtration as well as Packaging departments (SABMILLER, 2009). Each area was treated as a 'self-contained' island to do automation with communication between the islands via PLCs and the supervisory networks (SABMILLER, 2014).

A supervisory system called Supervisory Control and Data Acquisition (SCADA) was specified and bought with more than just plant control in mind. The cost (even though it was expensive) was justified in that the SCADA system would be able to handle future manufacturing execution systems (MES) (SABMILLER, 2014). However, the MES was developed as an independent system and not an enhancement or add-on to the existing supervisory system. This was due to the fact that programming standards changed from procedural to event driven processes (SABMILLER, 2014). Therefore, there was still a need for an efficient system to be adopted as a solution to manufacturing operations that operated as self-contained islands (silos). Hence, the company turned to the addition of Infor's APS ERP in order to integrate the various departments and its business functions of the entire company into a single shared system (Cooke, Guha and Filsoof, 2013).

Baltzan and Phillips (2010) point out that the implementation of ERP enables decision makers to make informed decisions from the accurate, comparable and reliable information available and accessible at their disposal. According to Webster (2008), systems that are used to plan, control the daily running of business transactions and provide a real time access to information throughout the organisation in a consistent manner are called ERP.

1.4 The Aim of the Study

The aim of the study is to investigate the end-users' perspectives of the efficacy of hybrid ERP at SABMILLER Prospecton Brewery and to make recommendations on best practices in the utilisation of ERP systems.

1.5 Research Objectives

The research objectives are as follows:

- To determine the involvement of key stakeholders during the implementation of hybrid ERP system at SABMILLER (Prospecton Brewery);
- To determine the benefits of using hybrid ERP in the production processes at SABMILLER (Prospecton Brewery);
- To determine the challenges that was encountered in the implementation of the hybrid ERP system at SABMILLER (Prospecton Brewery); and
- To make recommendations to the various stakeholders on the best practices in the utilisation of hybrid ERP systems.

1.6 Research Questions

The following research questions were formulated from the research objectives of this study:

- Were key stakeholders involved during the implementation of hybrid ERP system at SABMILLER (Prospecton Brewery)?
- What are the benefits of using hybrid ERP in the production processes at SABMILLER (Prospecton Brewery)?
- What are the challenges that were encountered in the implementation of the hybrid ERP system at SABMILLER (Prospecton Brewery)? and
- What recommendations can be offered to the various stakeholders on the best practices in the utilisation of hybrid ERP systems?

1.7 Significance of the Study

The findings of this study will allow SABMILLER to reflect on whether the implementation of the hybrid ERP systems was worth their investment. In addition, critical success factors (CSFs) have been highlighted which should assist the company to identify their current gaps in their operational levels of ERP. Recommendations that are provided in this study will enable the management to ensure the efficacy of ERP. The study will also add to the body of academic knowledge.

1.8 Format of the Study

The study was formatted according to the following chapters:

- **Chapter One: Introduction and Overview of the Study**

This chapter gives the background of the study, presents the problem statement and aims of the study. The research objectives, research questions and significance of the study is also discussed in this chapter.

- **Chapter Two: Literature Review**

Chapter two discusses the literature reviewed for this study. A background to understanding ERP is given. In addition, the benefits and challenges together with the CSFs of the ERP system are also discussed in this chapter.

- **Chapter Three: Research Methodology**

The research methodology adopted to conduct this study has been explained in this chapter.

- **Chapter Four: Analysis of Data and Interpretation of Findings**

Data received from the respondents was analysed and presented in this chapter. The findings are discussed and aligned to secondary data.

- **Chapter Five**

This chapters brings the study to a conclusion. In this chapter the findings from both the primary and secondary data are summarised according to the research objectives and research questions. The recommendations and area for further study are presented in this chapter.

1.9 Summary

This chapter introduced the study's problem statement, background to the study, the aim of the study, study's objectives, research questions as well as the significance of the study. The next chapter presents the literature gathered for this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Many companies throughout the world have adopted ERP implementation as it has become a key business driver. The ERP system has drawn attention mainly because of the variety of benefits it provides. The ERP software is usually installed into the company's computer system and comprises of a number of fully integrated business modules, which cover almost every feature of the company's business activities and processes. This chapter presents the literature reviewed for this study. The chapter starts with a background to the ERP system and presents an understanding of ERP is presented. The benefits, challenges and CSFs to implementing the ERP system are also discussed.

2.2 The Background of Enterprise Resource Planning System

There has been a substantial evolution of ERP systems in the past few decades (Baltzan and Phillips, 2010). Its technicalities and designs have improved significantly to ensure suitability not only for a company's internal use, but to such an extent that it extends its ability beyond enterprise boundaries (Baltzan and Phillips, 2010). Baltzan and Phillips (2010) add that the birth of the internet-enabled ERP systems enabled companies to achieve the extension of their business applications to external suppliers and to customers. This concept is technically internet-enabled (for example data warehousing) with the emphasis of this work on the hybrid ERP system. Masini and Van Wessenhove (2009) argued that ERP systems can act as the backbone link to enterprise applications such as supply chain management (SCM) as well as Customer Relationship Management (CRM) systems.

The ERP system started in the 1960s when the primary source of competitiveness was cost. In the 1960s the focus of companies was on high-volume production, cost minimization, and managing large inventories efficiently (Basolgu, Daim and Kerimoglu, 2007). An information

system was designed to forecast inventory needs for companies. The shortcoming of this initial system is that it did not factor in customer demand for products. However, the introduction of a computerised reorder point system (ROP) was enough to satisfy basic manufacturing planning and control.

Tsamantanis and Kogetsidis (2006) mention that ERP arose from the need for companies to control the actual as well as the assumed inventory levels. It was paramount to try and satisfy customers' needs and demands in order for organisations to stay competitive. Several software packages were designed and developed which were aimed at helping companies to control their inventories with more success and possible efficiency (Hasan, Trinh, Chan, Chan and Chung, 2011). One of the characteristics about technology is the fact that it evolves such that the software package developed was based on what was the concept for traditional inventory at the time and became obsolete as time progressed (Ngai, Law and Wat, 2008).

In the following decade (1970s) inventory control needs increased. In order for companies to maintain competitiveness, a need to minimise their total production costs by keeping their inventory levels as low as possible ensued. Materials resource planning (MRP) system came into being as a result thereof (Umble, Haft and Umble, 2003). This software package proved useful in many cases and they failed in as many cases as well. It was identified that one of the reasons for its failure was due to the fact that schedule inventory purchasing operations were closely related to both financial and human resources (Tsamantatis and Kogetsidis, 2006). However, it was however, a giant leap in the materials planning process (Umble, Haft and Umble, 2003). The use of a master production schedule (supported by the bill of materials files) which identified the specific materials needed to produce each finalised item. Computer machines could only be used to calculate gross materials requirements (Umble, Haft and Umble, 2003).

Functions such as sales and production operations came into existence in the manufacturing industry soon after the advent of MRP (Yu, 2007). This included production planning, master production, scheduling, capacity requirements planning as well as factory floor and supply scheduling techniques were incorporated (Hasan *et al.*, 2011). This system began to be recognised by managers as the most useful and powerful tool company-wide (Masini and Van Wessenhove, 2009). Technology by nature is associated with versatile and dynamic changes.

It was these traits that resulted in the developmental stage known as closed-loop MRP (Tsamantantis and Kogetsidis, 2006).

Each decade had its own developments and advancements and the 1980s saw the inclusion of other productive systems portions such as the MRP system expansion. The purchasing function was one of the first modules to be included (Yu, 2007). The shop floor, dispatch and the detailed scheduling control were included into the production system. As a result thereof it was no longer adequate to describe the expanded system as the MRP had already included work centre capacity limitations. These powerful developments at that time enabled the available technology coupled with the financial activities, MRP II (MRP II) to be incorporated in the financial accounting system as well as the financial management system along with the manufacturing and materials management systems (Umble, Haft and Umble, 2003). It was firmly believed that this was the best desired business integrated system that derived the materials and capacity requirements associated with a desired operational plan, allowed input regarding detailed activities and translated all this to financial statements (Umble, Haft and Umble, 2003). The question arose as to whether all these developed systems really integrated the organisation's business processes or it could only interface them.

By the 1990s, technological developments and advancements enabled functions such as manufacture, financial accounting, financial management, SCM, human resource management (HRM), purchasing, marketing, product design and life cycle management could then be incorporated in the systems software (Tsamantantis and Kogetsidis, 2006). It was only at this stage of development that the term 'ERP' came into being coined to refer to the comprehensive systems and to distinguish between the MRP systems. Tsamantantis and Kogetsidis (2006) add that it was this evolution which eventually led to the ERP concept which integrated all functional areas and transactional processing activities in the business enterprise in its entirety. ERP still evolves and is still dynamically characterised by the rapid changes and continuous developments (Hasan *et al.*, 2011). As part of this concepts developmental processes throughout the years different business aspects were gradually becoming embedded onto the then MRP, MRP II and eventually ERP systems as they evolve (Tsamantatis and Kogetsidis, 2006).

2.3 Understanding Enterprise Resource Planning

Having evolved from MRP, the ERP system is an integrated information system that supports business processes and functions by overseeing the entire organisation's resources efficiently and effectively (Hwang, 2011). Barker and Frolick (2003) add their view in that ERP entails the planning and overseeing of the organisation's resources in the most efficient, productive, and profitable manner. According to Kumar and Van Hillegersberg (2000, p. 22), ERP can be defined as "configurable information systems packages that integrate information and business processes within and across functional boundaries within an organisation". Al-Mashari, Al-Mudimigh and Zairi (2003) add that ERP is an all-inclusive software solution that strives to integrate the complete range of business processes and functions, in order to present a company-wide view of the business from a single IT architecture. Gartner (2012) defined ERP as "the ability to deliver an integrated suite of business applications. ERP tools share a common process and data model, covering broad and deep operational end-to-end processes, such as those found in finance, human resource (HR), distribution, manufacturing, service and the supply chain".

According to Webster (2008), ERP systems are used to plan the action steps, control and record the day to day transactions of running a business and provide a real time access to information in a consistent manner throughout the organisation. Sledgianowski, Tafti and Kierstead (2008) also concur that ERP is an IT driven system which virtually enables enterprises to streamline and integrate all its operations from order processing to vendor and CRM.

In an ERP system the same modules can be found in a company's computers that are connected to each other virtually (Green Beacon Solutions, 2013). Hence, it allows for all employees from different business departments within the company (namely normal employees to top management) to communicate in real time. Figure 2.1 indicates the most common modules that can be found in a typical ERP system. Each employee can use his or her module according to the department he or she belongs to. For example, the logistics clerks will log in the ERP system and work in their specific work activities. They can check the inventory level, trace the goods and exchange information with other departments smoothly in real time.



Figure 2.1: Typical ERP system modules

Source: Green Beacon Solutions (2013)

According to Addo-Tenkorang and Helo (2011), the implementation of the ERP system allows for data and information to flow effectively and efficiently through the entire company. This in turn allows for all managers of the company to get access to same information. Hwang (2011) points out that a company is more competitive when it has effective and efficient business processes in place.

2.4 New Millennium Trends of Enterprise Resource Planning

Figure 2.1 further reflects the driving forces behind hybrid ERP namely:

- Demand for better end-user experience;
- Greater data availability enabled through cloud computing; and
- Functional leaders gain greater influence over IT investments.

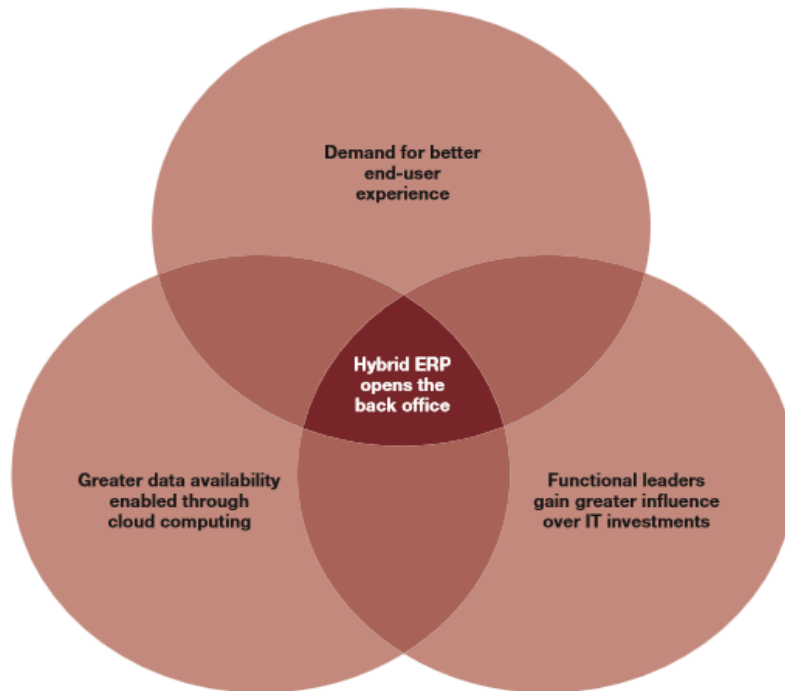


Figure 2.2: Driving forces behind hybrid ERP

Source: PriceWaterHouse and Coopers (2015)

According to Cooke, Guha and Filsoof (2013), the three trends that drive hybrid ERP systems are:

- Firstly, the emergence of cloud computing which made the notion of a single enterprise-wide business obsolete. It has provided a platform for business enterprises to link loosely coupled business systems costing fit-for-purpose, cloud enabled applications on the perimeter, tethered to move narrowly focused legacy ERP back office systems. It provides the degree of data mobility that has become a requirement for virtually every business;
- Secondly, business enterprises massive ERP infrastructure investments which normally does not deliver the end-users experiences and mobility increasingly demanded by suppliers, customers as well as the employees; and
- Finally, functional leaders such as chief procurement officers have long demanded greater influence of the technologies that run their operations optimally. Hybrid ERP is ideal to provide that kind of flexibility.

Seeds and Backman (2016) state that technology is evolving and this evolution has resulted in the new ERP grade applications developments which ultimately made the old ERP obsolete. This allowed for business enterprises to migrate in order to become more flexible and in keeping up the pace with the market demand forces (Cooke, Guha and Filsoof, 2013). They further argue that integration of the old and new applications into becoming hybrid ERP systems could benefit organisations. This integration enables specific business functions such as supplier management, re-order period, lead time of inventory to operate with greater agility as opposed to what could be attained in old-style IT organisation (Cooke, Guha and Filsoof, 2013). Nah and Delgado (2006) also point out that the hybrid ERP system enables companies to integrate their business processes and all information relevant to their organisation.

ERP systems from the start of the new millennium (year 2000) took a growth path of an extended ERP which comprises of scheduling, forecasting, capacity planning, E-Commerce, warehousing as well as logistical aspects of the system (Baltzan and Phillips, 2010). Previously this system witnessed the emergence on ERP II which enabled the system to integrate its HR management modules, CRM modules, management of projects modules, production management modules portal capacity as well as the integrated financials (Yu, 2007).

According to King and Flor (2008), integration is referred to as the degree to which a company attains unity in organisational subsystems by harmonizing different departments, modules, software, and legacy systems. Integration is about attaining a unity of effort in organisational subsystems (King and Flor, 2008). It is to include both a set of physical factors and information flows that span the value chain. The organisation possessing higher levels of integration tends to have higher performance. However, companies must realise that the benefits of an ERP system are limited unless it is seamlessly integrated with other information systems.

Figure 2.1 depicts the back office as one piece of the company's strategy to create a global business function to consolidate specialist activities. SABMILLER implemented its back office associates active and passive data governance solutions to address its customers, vendors, materials and financial data (Hoots and Wiley, 2015). Hoots and Wiley (2015) illustrated the active as well as the passive back office points in relation to their company's processes in that master data records are provided as a globalised, single and harmonised data governance solution by the back office active data governance solution. Data validity aligned with data design rules and proper workflow for provisioning and approval before data is automatically

posted to the SAP ERP is ensured by the back office active data governance solution (Hoots and Wiley, 2015). This solution further allows users to perform data maintenance activities such as creating, copying, updating, blocking and deleting a master record for financial, material, vendor as well as customers' data (Hoots and Wiley, 2015).

Thereafter data is posted to SAP ERP once its quality has been checked by the back office passive data governance solution which ensures that data integrity is maintained in the production environment (Hoots and Wiley, 2015). This is the solution where service level agreement are monitored by users to identify violations or check data error reports (Hoots and Wiley, 2015). All three driving forces (as depicted in Figure 2.1) create a global business services function to consolidate back office and activities (Cooke, Guha and Filsoof, 2013).

2.5 Benefits of Enterprise Resource Planning

Companies look for the following benefits when implementing an ERP system (Beatty and Williams, 2006; Finney and Corbett, 2007):

- Integrate financial data;
- Standardise manufacturing processes;
- Standardize HR information;
- Have real-time information;
- Generate information for decision making;
- Reduce costs;
- Increase sales;
- Fulfil taxation requirements; and
- Respond to growing global competition.

In view of the above, ERP systems can be comprehensive and useful in integrating many kinds of information processing abilities by placing data into a single database (Beatty and Williams, 2006; Finney and Corbett, 2007). Through the implementation of an ERP system, companies can reduce the overall costs, make accurate data available in real time, and exchange information with customers and suppliers (Basolgu, Daim and Kerimoglu, 2007). Trott and Hoecht (2004) add that ERP systems can provide more accurate and timely information. In

addition, through the integrating business functions, a company can reduce data collection time and avoid data duplication. The timely information assists managers to improve decision making as well as facilitates communication between users.

Tsamantatis and Kogetsidis (2006), Cooke, Guha and Filsoof. (2013) and Yu (2007) concur that the following are five major reasons that motivate companies to adopt a hybrid ERP system:

- ERP systems integrate financial information: A company's senior manager always tries to have a holistic understanding of their company's overall performance. This could result in them encountering different versions from different personnel within the company. However, the implementation of an ERP system provides a single unified version of the information required as everyone in the business enterprise uses the same system.
- Customer order information integrated through ERP systems: To have this kind of information in one software system as opposed to have different systems that do not communicate, brings convenience in keeping track of orders more easily. The ERP system enables the coordination of inventory, shipping and manufacturing amongst many different locations simultaneously. Hence the links with suppliers and customers can be significantly strengthened.
- Manufacturing processes are sped up and standardised through ERP systems: using a single integrated ERP system enables the automation of some of the manufacturing processes which results in cost effectiveness, saves time, reduces head count as well as increases productivity.
- Inventory reduction through ERP system: inventory controlling plans require the proper reorder period. Other activities related to inventory reduction control measures flow smoother and at an improved fulfilment process inside the company.
- ERP system standardises HR information: The process flow related to HR activities which includes the tracking of employee's time, other benefits and services for employees (for example leave management) are administered more conveniently and more effectively.

When ERP systems are successfully implemented in a company, it provides them with competitive advantages (Finney and Corbett, 2007). Hence, this clarifies why an ERP system is generally considered to be a critical element for improved business performance. Trott and Hoecht (2004) highlight that because the ERP system is a vehicle that integrates business

processes across functional boundaries, barriers between business functions and departments are reduced. An added benefit is that the ERP system enables all users or employees to communicate easily as the ERP system allows for a number of modules to be fully integrated into the business. The system also enables the company to effectively manage their resources in areas such as HR, finance and materials (Markus and Tanis, 2000, Basolgu, Daim and Kerimoglu, 2007).

2.6 Challenges of Enterprise Resource Planning

The implementation of the ERP system affects the entire company (namely process, people, and culture) hence a number of challenges are encountered as discussed in this section. Stockdale and Standing (2006) outlined that one of the major challenges for ERP evaluation and selection is the need to develop a generic and sufficient framework to be applicable and sufficiently detailed to provide effective guidance. It is paramount to understand what is required to conduct an ERP evaluation.

Ehie and Madsen (2005) and Helo, Anussornnitisarn and Phusavat (2008) concur that the implementation of ERP systems generally have a delayed estimated schedule and overruns an initial budget. In addition, ERP implementations have often failed to achieve the company's targets and desired outcomes. However, many researchers have reported that the failure of ERP implementations was not as a result of ERP software itself, but instead by extreme complexities of the massive changes that the ERP causes within the company (Scott and Vessey, 2000; Helo, Anussornnitisarn and Phusavat, 2008; Maditinos, Chatzoudes and Tsairidis, 2012).

Zornada and Velkavrh (2005) argue that the failures experienced by many companies was that they followed the principle of 'best practices' in most successful companies instead of forming their own model of 'best practices'. Helo, Anussornnitisarn and Phusavat (2008) add that the main challenge with ERP implementation are not technologically related issues (namely technological complexity, compatibility and standardization) but mostly challenges related to the human element which include resistance to change and organisational culture. In addition, incompatible business processes, project mismanagement and the lack of top management commitment adds to the challenges that are encountered in the implementation of the ERP

system. Huang, Chang, Li and Lin (2004) point out that there are 10 major challenges that causes ERP implementation failure as listed in Table 2.1.

| Priority | Challenge |
|----------|--|
| 1 | Lack of senior manager commitment |
| 2 | Ineffective communications with users |
| 3 | Insufficient training of end-users |
| 4 | Failure to get user support |
| 5 | Lack of effective project management methodology |
| 6 | Attempts to build bridges to legacy applications |
| 7 | Conflicts between user departments |
| 8 | Composition of project team members |
| 9 | Failure to redesign business process |
| 10 | Misunderstanding of change requirements |

Table 2.1: Ten major challenges of ERP failure

Source: Adapted from Huang *et al.* (2004, p.384)

The pivotal role of the hybrid ERP system is to engage customers, suppliers and employees for the business enterprise. However, they still need to be integrated with the company's back-office in order to be fully functional (Hoots and Wiley, 2015). However, during the process of implementing ERP software, it is imperative that project managers, implementation partners and involved end-users are informed of the following (Rosemann and Wiese, 1999):

- The company's processes are aligned to ERP software;
- The selected ERP solution supports the needs of the system users (the internal customers);
and
- The development and the adaptation of the system to changing parameters are guaranteed.

The next section discusses the CSFs that are imperative in the implementation of ERP. In order to ensure that the company optimises on the benefits of the ERP and to minimise the challenges associated therefore, the following CSFs should be given due consideration.

2.7 Critical Success Factors in the Implementation of Enterprise Resource Planning

Poonam (2010) defined CSFs as “the limited number of areas in which satisfactory results will successfully yield competitive performance for individuals, departments or organisations”. According to Finney and Corbett, (2007, p.334), CFSs “are those conditions that must be met in order for the implementation process to occur successfully”.

The initial brewing capacity for Carlsberg brewery before the implementation of ERP system was two million hectolitres per annum. That volume has since the ERP implementation increased drastically to thirty million hectolitres per annum and it became the best selling beer in the Island (Tsamantatis and Kogetsidis, 2006). The success of ERP implementations at these breweries are noted, however there is a high number of ERP systems failure.

According to Ibrahim (2010) ERP system implementation is a highly complicated task and broad in scope for many larger companies and it could be tremendously complex. In addition, it takes months to implement the ERP system and years to obtain the required benefits from the system. However, Ibrahim (2010) adds that benefits to the implementation of the ERP system are not easy to claim as companies are faced with a number of challenges pre and post the implementation of the system. Rasmy, Tharwat and Ashraf (2005, p.1) point out that “three quarters of the ERP projects are considered failures and many ERP projects ended catastrophically”. Therefore it is essential for companies to take cognisance of CSFs (as discussed below) in order to ensure that the ERP system performs at its optimal level.

2.7.1 Top Management Support

The ERP implementation inevitably results in organisational changes, hence it necessitates the engagement of top management. Finney and Corbett (2007, p.329) point out that top management support is referred to as the “degree to which executives understand the specific benefits of an ERP system and encourage implementation of new ideas and policies for implementing the system”. According to Nah and Delgado (2006), top management support is acknowledged as one of the key internal CSFs of ERP implementation. Top management

need to be committed throughout an ERP implementation, provide leadership, provide the needed resources, provide encouragement and need to publicly acknowledge the project as a top priority (Soja, 2006). Top management must be committed in their own involvement and have a willingness to allocate valuable resources to the implementation effort which ultimately strengthens the commitment of all the employees in the company (Ulrich, 2007). Hence, if top management is not committed to the implementation of ERP then a high risk of failure is inevitable.

2.7.2 Training the End User

Soja (2006) mentions that ERP implementation is not only a technical project, but also a people project. According to Finney and Corbett (2007, p.331), end user training can be recognised as “the degree to which a company reskills and professionally develops the IT workforce and those who will interact with the system”. ERP implementation evolves around not only the change of technology, but also the change of tasks, structures, and personnel (Stewart, Milford, Jewels, Hunter, and Hunter, 2000).

Gupta (2000) points out that one of the key challenges and CSFs in ERP implementation is end user training. A lack of end-user training results in creating confusion, inaccuracies, questioning the credibility of the system and a decrease in user satisfaction which ultimately leads to implementation failure. Therefore, companies must take cognisance of the fact that end user training is to train, retrain, and develop the workforce to understand how the system will change business processes (Nah, Lau, and Kuang, 2001).

Bradley (2008) highlights that when the workforce is trained or retrained there will also be a reduction in the resistance of change which ultimately positively affects the possibility of a successful ERP system implementation. The company should therefore ensure that intense investment in the training is made, and that on-site support for staff and managers during implementation are imperative.

2.7.3 Configuration

Configuration is referred to as the degree to which a firm matches the software application packages to organisational processes Klein (2007, p.366) state that. This means that configuration is to adapt the ERP system to the company's business and to simultaneously adapt the company to the ERP system (Davenport, 2000). Hong and Kim (2002) mention that ERP implementation may result in radical organisational changes that require constant management. Unlike other software, ERP implementation requires that organisational processes are configured to fit the basic business practices that are embedded in such application packages. Morton and Hu (2008) highlight that there can be conflicting interests from ERP vendors and the company if configuration does not take place. Kimberling (2010) points out that the ERP failure or its termination is due to misalignment between the company and the software itself. He argues that very often vendors make several releases of new versions of their ERP and the new release may or not be aligned with the needs and requirements of the company (see Figure 2.3). Kimberling (2010) adds that uploading of data may take time as the employees will not be able to use their computers while the ERP system is uploaded.

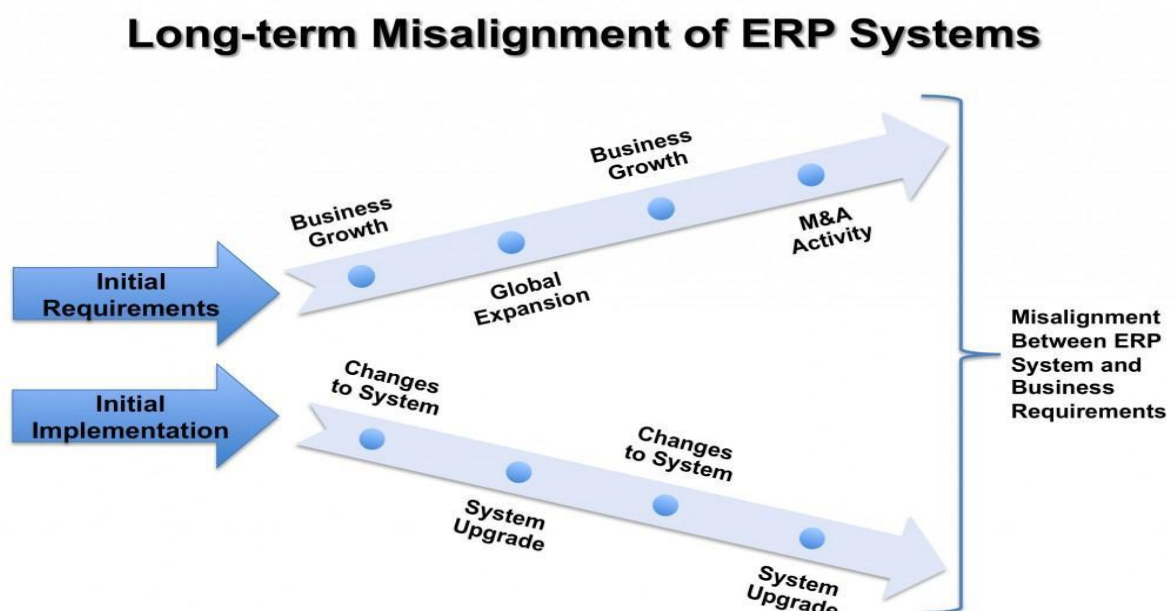


Figure 2.3: Long-term misalignment of ERP system

Source: Panorama Consulting Group LLC (2010)

2.7.4 Adaptation

Adaptation is when a company accepts and adjusts new technology and systems to cope with changes (Hong and Kim, 2002). Enterprise Resource Planning is habitually a dynamic process of joint adaptation between IT and the surrounding environment. Hong and Kim (2002) mention that the successful implementation of the ERP system is dependent on the type and extent of ERP adaptation.

2.7.5 Information Technology Readiness

Investing in IT is considered as one of the critical business success factors that enable business enterprise to gain competitive advantage (Wickramasinghe and Karunasekara, 2012). Finney and Corbett (2007) and Soja (2006) concur that it is critical to assess the IT readiness of a company. This includes the company's skills (IT staff's ability) and infrastructure (Somers and Nelson, 2004). Lee, Lee, and Lin (2007) opine that irrespective of the extensiveness of IT, companies fail to elevate organisational efficacy due to poor employee acceptance of new technologies. "Companies with a higher level of technical expertise and infrastructure can be expected to master the technical aspects of business and contribute more to firm performance than firms with a lower level of technical expertise and infrastructure" (Lee, Lee, and Lin, 2007, p. 677).

2.7.6 Project Management

Excellent project management is another critical factor for successful ERP implementation. Project Management entails the utilisation of skills and knowledge in coordinating the scheduling and monitoring of defined activities in order to make sure that the defined objectives of implementation projects are achieved (ALdayel and Al-Mudimigh, 2011).

A project leader should be identified prior to the start of the implementation of ERP. Markus and Tanis (2000) point out that during the chartering phase of the ERP system, a project leader is clear guidelines must be given to the project team in order for them to execute the objectives of ERP. In addition, their work plan which must be linked to their resource allocation plan

must be determined as a team. If project leaders are not clued up with specific decision-making points, it will ultimately create significant problems.

Companies should ensure that the project leader and has the necessary skills, expertise and knowledge to carry out the implementation of the ERP system. Skills are usually provided for by the ERP consultants in terms of training or answering any questions that may arise (Bhatti, 2002). After the installation of an ERP system, IT staff should be able to assist the project team to solve any problems without the help of consultants. In addition the project team members should be made up of employees within the company and external experts with specialties in ERP.

2.7.7 Communication

There should be effective communication between managers and employees as well as among employees to ensure the success of ERP implementation (Loh and Koh, 2004). Effective communication is when a company shares decisions, expectations, and goals throughout the organisation (Carmeli and Tishler, 2004). Effective communication also entails communication between departments, top management and vendors. Goals and expectations of the ERP system needs to be communicated throughout the chartering and implementation phase. In addition Loh and Koh (2004) highlight that effective communication entails clear instructions and messages which in turn avoids breakdown and confusion. Communication enables employees to feel more involved in the overall implementation process. A feeling of belonging helps produce interested, committed employees, which eventually enhances ERP implementation performance. Sarker and Lee (2003) point out that companies should get employees to understand what is changing, why it's changing, and how it will help the organisation which is ultimately crucial for the buy in of the ERP system.

2.7.8 Business Process Re-Engineering

Business process re-engineering (BPR) requires to be involved in the implementation of hybrid ERP to avoid unnecessary incompatibility between the organisation's business processes with the packages software (Martin and Cheung, 2005). Ngai, Law and Wat (2008) recommend that

a company's business processes should be re-engineered to fit the software as opposed to trying to force and compensate software to fit the organisations business processes. BPR is one of the CSF in the implementation of the ERP system (Soja, 2006).

According to Hwang (2011), when a company's business processes are efficient, they can be more competitive in the marketplace. It is impossible to suggest any business processes without taking costs into account and the possibility of error could increase drastically if more software customisation were undertaken (Martin and Cheung, 2005). Such errors may deter companies from approaching ERP customisation on the magnitude that require less effort. Mutual fit between the organisations and their selected ERP package or modules is critical to the success of the implementation (Ngai, Law and Wat, 2008). Technological collaboration of different technologies available in an organisation requires to be working towards achieving the similar desired effects by the organisation (Martin and Cheung, 2005).

Figure 2.4 depicts interrelated business processes of an organisation that is working with an ERP software package that enables business enterprise's departments to work in cohesion to achieve similar organisational strategic goals and objectives.

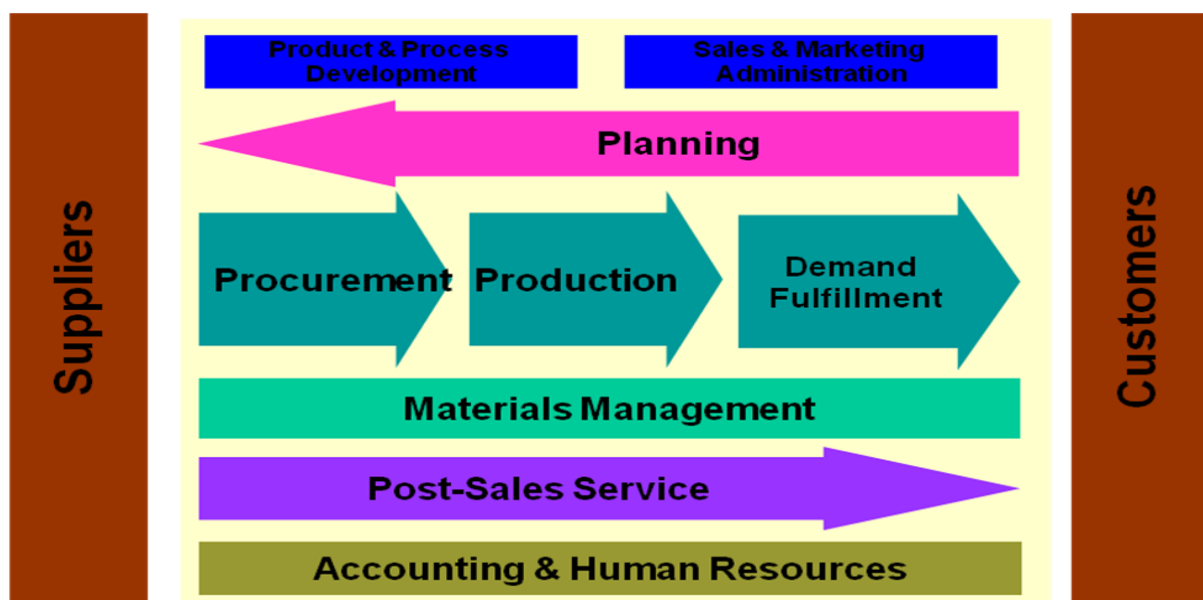


Figure 2.4: Business workflow with ERP system implemented in an organisation

Source: Pieterse (2010)

2.8 Hybrid Enterprise Resource Planning in Other Global Business Enterprises

Keo and Carlsberg breweries' productivity increased considerably after they adopted ERP system Tsamantatis and Kogetsidis (2006) argued. The production volumes of Carlsberg brewery increased from two million hectolitres to 30 hectolitres per annum after the adoption of hybrid ERP (Tsamantatis and Kogetsidis, 2006). They further argue that it is essential for the companies to carefully and strategically select the ERP modules they would need to embed in accordance with their organisational needs, dynamics and processes.

Effective ERP systems improve a company's responsiveness and flexibility which greatly influences successful supply chains (Chang, Cheung, Cheung, and Yeung, 2009; Chan and Chan, 2010). It is therefore apprehensible that it is not just an implementation of ERP systems that could help business enterprises either maintain or become more competitive, but a proper selection of ERP modules should be taken into account as one of its CSF constituency (Huang and Wang, 2014).

Carlsberg and Keo breweries embedded a variety of ERP modules in their organisations which included amongst others the assets module, controlling (managerial) accounting module, sales and distribution module, materials management (inventory accounting), production and production planning as well as quality management from different software suites and vendors (Tsamantatis and Kogetsidis, 2006).

It was only after ERP implementation at these organisations that they managed to accurately plan their production volumes in order to respond to the predicted demands in their local markets. Masini and Van Wessenhove (2009) argued that it remained a challenge for the firms to properly select an effective ERP strategy. However, business organisations need to increase their investment in information technology in order to improve their efficiency and responsiveness of operations as they are confronted by turbulent markets, blurred technological landscapes and fierce competition or rivalry for their market share (Wickramasinghe and Karunasekara, 2012).

2.9 Improving Efficiency through Benchmarking

One of the best tools and techniques that enable the key success factors and opportunity for improvement is through benchmarking Goncharuk (2008) argued. This allows top management to have a full imagine of their enterprise's shortcomings, its weak points and capabilities of their elimination as well as improving efficiency and quality. The performance competitive benchmarking is expedient to use covering majority of enterprises in the industry in question Goncharuk (2008). It is rewarding to conduct this process of benchmarking internationally should it happen that factors like too rigid competition, lack of information about competitors if there are any (Goncharuk, 2008). Developed economies such as the United States of America and many other European countries (especially manufacturing companies) invested heavily on IT, mainly ERP systems (Masini and Van Wessenhove, 2008; Ngai, Law and Wat, 2008, p.549).

In the South African context SABMILLER is arguably dominating the beer market with very little market share gained by their emerging competitors like Brand house. For the purpose of this study the benchmarking conducted at Ukraine for Ukrainian breweries against other breweries in the world has been taken into account as it reflects SABMILLER in many instances (Hoots and Wiley, 2015). The benchmarking of the Ukrainian breweries (see Annexure E) allowed the team at SABMILLER to determine whether its ERP implementation was aligned and whether it would add value in maintaining the competitive advantage that is needed to compete both locally and globally.

2.10 Enterprise Resource Planning Evaluation and Selection Stakeholders

Different stakeholder groups are needed to understand ERP evaluation and selection in order that they are able to make informed decisions. Yu (2007) recognised five parts that are involved in information software investments, each with their own set of objectives and expectations. Table 2.2 provides an overview of ERP evaluation and selection process.

| Stakeholders | Objectives and expectations |
|------------------------------|--|
| Management (key users) | Interested in financial and any other gain generated by the investment |
| End users | Seek to ensure that the project is implemented on time within budget and to user requirements. |
| Project team (implementers) | Technology should meet their requirements whilst integrating flexibility to adopt to the changing requirements of users and /or customers. |
| Supporters (sub-contractors) | Focus on short-term criteria set sponsors (used to judge their performance). Focus on short-term criteria. Consists of many groups, each with its own goals and objectives not benefit from or influence the investment. |
| Others (stakeholders) | Might support or oppose the investment possible covert resistance. |

Table 2.2: Investment stakeholders in IS

Source: Yu (2007)

Understanding as to who should conduct the ERP evaluation process could explain as to what extent or degree the intended outcome of evaluation could be recognised. It is therefore of utmost importance to consider different stakeholders, stakeholders' groups, different positions and interests when considering an ERP system for any business enterprise. Thompson, Strickland and Gamble (2005) outlined that strategy is an exercise of an astute and actively focused entrepreneurship actively involved in doing old things in a new way or embarking on restructuring the workflow and embark on totally doing things in new ways.

2.11 The Use of the Balanced Scorecard

This concept from its inception by Adries Kaplan in 1992 from Harvard School of Business in United States of America has been widely used as a method of evaluation. It is always useful to define concept before it is applied onto any sphere of life. According to Noreen, Brewer and Garrison (2011) the Balanced Scorecard (BSC) can be defined as the mechanism that consists of an integrated set of performance measures that are derived from and support the company strategy.

The BSC concept insight enables corporate decision makers to use it to select, measure and evaluate amongst others the IT related investments. In order to structure the management of ERP software, the related tasks can be divided into the process of implementing ERP software and the operational use of ERP software. Hence in order to evaluate both tasks the BSC (a framework to structure the relevant key performance indicators for Performance Management) can be applied (Kaplan and Norton, 1993).

Salem, Hasnan and Osman (2012) add that the BSC was developed as means to evaluate corporate performance by focusing mainly on four different perspectives, namely:

- Financial perspective;
- Internal business process perspectives;
- Customer perspectives; and
- The learning and development perspectives.

By taking into account these four perspectives this tool could be used to select, measure, evaluate and guide activities that take place in specified business areas such as the selection of suitable ERP system software solution for any business enterprise. The BSC framework could effectively add value if adequately used for the ERP project selection as shown in Table 2.3.

| | |
|--|--|
| Users orientation (End-user perspectives) | Business Value perspectives (Management's view) |
| Mission Deliver value-adding ERP solution to end users | Mission Contribute to the value of the business |
| Key Question Is ERP project fulfilling the need for our end users? | Key Question Is ERP accomplishing our goals and contributing value to the organization as a whole? |
| Objectives <ul style="list-style-type: none"> • Establish and maintain a good image and reputation with end-users; • Exploit ERP opportunities; and • Establish a good relationship with end-users and satisfy end-user requirements. | Objectives <ul style="list-style-type: none"> • Establish and maintain a good image and reputation with management; • Ensure that the ERP project provides business value; and • Control ERP project costs. |
| Internal business processes perspective (Operations based view) | Future readiness perspective (Innovation and learning view) |
| Mission Deliver ERP solution in an efficient and effective manner | Mission Deliver continuous improvement and prepare for future challenges |
| Key Question Will the ERP project create, deliver and maintain support to our product and service in an efficient manner? | Key Question Is the ERP project improving products and services and preparing for potential change and challenges? |
| Objectives | Objectives |

| | |
|--|---|
| <ul style="list-style-type: none"> • Anticipate and influence requests from end-users and management; • Be efficient in acquiring and testing hardware and software tools; • Provide cost-effective training that satisfies end-users; and • Effectively manage ERP related problems that arise. | <ul style="list-style-type: none"> • Anticipate and prepare for ERP related problems that could arise; • Continuously upgrade ERP skills and knowledge through training and development; • Regularly upgrade ERP and related IT portfolio; and • Conduct cost-effective research into emerging technologies and their suitability for business. |
|--|---|

Table 2.3: ERP project selection

Source: Yu (2007)

2.12 Summary

This chapter outlined and discussed the background of enterprise resource planning (ERP) from its inception up to the 21st century. Driving forces behind the hybrid ERP this millennium were described. Ten major challenges of ERP failure were outlined and discussed in details. Further to that, this chapter also discussed hybrid ERP at other global business enterprises as well as the use of balanced scorecard as a selecting, measuring and evaluating tool for business enterprise's systems performance. Literature has indicated that ERP software is not a very simple and straightforward solution. Employees' attitudes or behaviours even at the lower levels could have an impact on the company's operation abilities. When a company implements the ERP system, it comes with both benefits and challenges. However, in order ensure the effectiveness of ERP, CSFs needs to be given due consideration. The next chapter discusses the research methodology utilised for this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Conducting a study is a process concerning collecting, analysing, and interpreting data collected so that a particular phenomenon could be understood Wilson (2010). This process involves defining the study's objectives, managing data so that the established findings could be communicated in a systematic way in accordance with guidelines and established framework (Wilson, 2007). Collins and Hussey (2014) contend that seasoned researchers recommend that it is imperative for those conducting studies to make use of suitable methodologies. This chapter discusses the research design, ethical issues, procedure for sample selection, data collection method or mechanism as well as the data analysis process.

3.2 Research Design

One of the most vital parts of conducting a study is for the researcher to appropriately formulate a research design. According to Sekaran and Bougie (2010) it is essential to consider the fact that the more sophisticated and rigorous the research design is, the greater the time and costs to be used effectively. A descriptive survey which is concerned with identifying and counting the frequency of a specific population, either at one point in time or at various for comparison has been used for this study.

According to Singh (2011) research design is a blue print for data collection which is designed to answer research questions. Saunders, Lewis and Thornhill (2012) mention that there are three research designs that are often used for any research and are as follows:

3.2.1 Exploratory Studies

This kind of study is more useful in investigating subject matters where there is very little or no knowledge associated with research project under study (Hair, Celsi, Money, Samuel, and Page, 2011). The fundamental objective of this kind of study is to look for patterns, ideas or hypotheses (Collins and Hussey 2014). It concerns itself with this rather than testing or confirming a hypothesis.

3.2.2 Descriptive Study

Collins and Hussey (2014) described this kind of study as that which is used to describe phenomena as they exist. Collins and Hussey (2014) state that statistical techniques are frequently used as data collected in this kind of study is often quantitative in nature. These kind of studies provide wealth of information about the environments, people living in them as well as their circumstances. Quantitative and qualitative research methods are the integral parts of descriptive research methods.

3.2.3 Explanatory Research

The aim of the explanatory research is to study a situation or a problem in order to explain the relationships between variables.

For this research a descriptive-explanatory research design was utilised. The descriptive research was used as a precursor to explanatory research in that after the findings were described from the statistics obtained an explanation was given for each test item.

3.3 The Research Philosophy

The research strategy can take the form of two approaches namely quantitative and qualitative research as pointed out by Bryman and Bell (2007). A quantitative analysis approach was used for this study. Having taken into account the objectives, the limitations of this study and the nature of the organisation in question, a quantitative methodology/technique appeared as the most appropriate for this study. The primary reason for choosing this data collection method was due to the fact that it was convenient and palatable in interpreting the respondents' responses in a more scientifically proven way.

3.4 Research Strategy

For this study the survey in the form of a questionnaire was used to gather primary data that was needed. The survey can be used to gather the same primary data from large groups of people and may incorporate demographic information, opinions or satisfaction levels (Choudrie and Dwivedi, 2005).

3.5 Target Population

Sekaran and Bougie (2010) state that the most logical starting point for a primary research study is to define the population of the research before deciding on how large a sample should be. Keller (2009) defines population as a group of all items of interest to a statistics practitioner or the researcher. The target population for this study was the end-users of the hybrid ERP system at SABMILLER (Prospecton Brewery). There are approximately 337 end-users at the brewery.

3.6 Sampling Strategy

It is not always possible to study the entire universe or population due to the nature of dynamics associated with it though it would provide the weight and accuracy of the research findings (Keller, 2009). There are two key types of sampling namely probability and non-probability sampling.

Fox and Bayat (2007) mention that probability sampling involves a sample selection method where the sample members (elements) are chosen from the target population on a purely random (chance) basis. This selection process guarantees that every individual of the target population has a known and non-zero probability of being incorporated in the sample. In non-probability sampling, the researcher has no way of calculating or guaranteeing that each element of the population will be represented in the sample (Leedy and Ormrod, 2010). Non-probability sampling is generally used where it is convenient and cost-effective to do so as was the case in this study.

For this study due to the fact that a complete sampling frame was difficult to establish, a non-probability sampling was used for this study. Monette, Sullivan and De Jong (2010) stated that when it is extra-ordinarily difficult to establish a sample frame then non-probability sampling may be embarked upon. The convenience sampling which is an example of non-probability sampling allows for members of the target population to be selected for the sake of convenience (Welman, Kruger and Mitchell, 2005). The sample size selected for this study was 201. However, due to the change in management that took place during this study, only 31 samples were allowed to participate in the study. The sample was selected by the new Manager.

3.7 Research Instrument

Questionnaires are considered the most flexible, dynamic and most commonly used primary data collection instrument (Sekaran and Bougie, 2010). For the purposes of this study a questionnaire was chosen as the primary data collection instrument. According to Collins and Hussey (2014), questionnaires are a carefully structured list of questions with a view to elicit reliable responses from a chosen sample.

3.7.1 Questionnaire Construction

The questionnaire was developed after a literature search and was based on the five point Likert-style rating scale. Singh (2011) outlined that Likert scale turns the questions into a statement and ask the respondents to indicate their level agreement or disagreement with the statement.

The questionnaire was designed as follows:

- **Section A:** Demographic Information;
- **Section B:** Research objective: To determine the involvement of key stakeholders during the implementation of the hybrid ERP system at SABMILLER (Prospecton Brewery);
- **Section C:** Research objective: To determine the benefits of using Hybrid ERP systems at SABMILLER (Prospecton Brewery); and
- **Section D:** Research objective: To determine the challenges that SABMILLER (Prospecton Brewery) encountered during the utilization of the Hybrid ERP system.

3.7.2 Pilot Study

A pilot study was conducted to determine the reliability of the research instrument. Five end-users assisted to peruse the questionnaire for language, clarity of questions and time taken to complete the questionnaire. The respondents mentioned that the questionnaire was easy to understand, the questions were clear and that the questionnaire could be completed in 20 minutes.

3.7.3 Administration of the Questionnaire

The questionnaire was personally distributed to 31 as per the selected sample. Respondents were only required to answer one set of questions. The nature and purpose of the questionnaire

was explained to them. They were given two weeks to complete the questionnaire. However many did not complete the questionnaire within the given time, hence more time was given.

3.7.4 Collection of Questionnaire

At the end of the third week it was realised that it was a challenge to get back responses. More time was given and every week a reminders were sent out. This process went on for approximately twenty one months as respondents continuously promised to complete the questionnaire. However, after constant reminders all 31 questionnaires were collected for analysis.

3.8 Data Analysis

Collins and Hussey (2014) state that analysis of data forms an integral part of any research project. Statistics has the most powerful tools to conduct analysis (Keller, 2008). Statistical methods used for summarising data is referred to as descriptive statistics whereas the methods for making decisions or predictions about a population is referred to as inferential statistics (Keller 2008). This study utilised descriptive statistics to make decisions.

Figure 3.1 depicts the data analysis process throughout different stages involved from data collection, cleansing of data for analysis, analysis process, interpretation of results, discussion all the way to ascertain whether the research questions were answered.

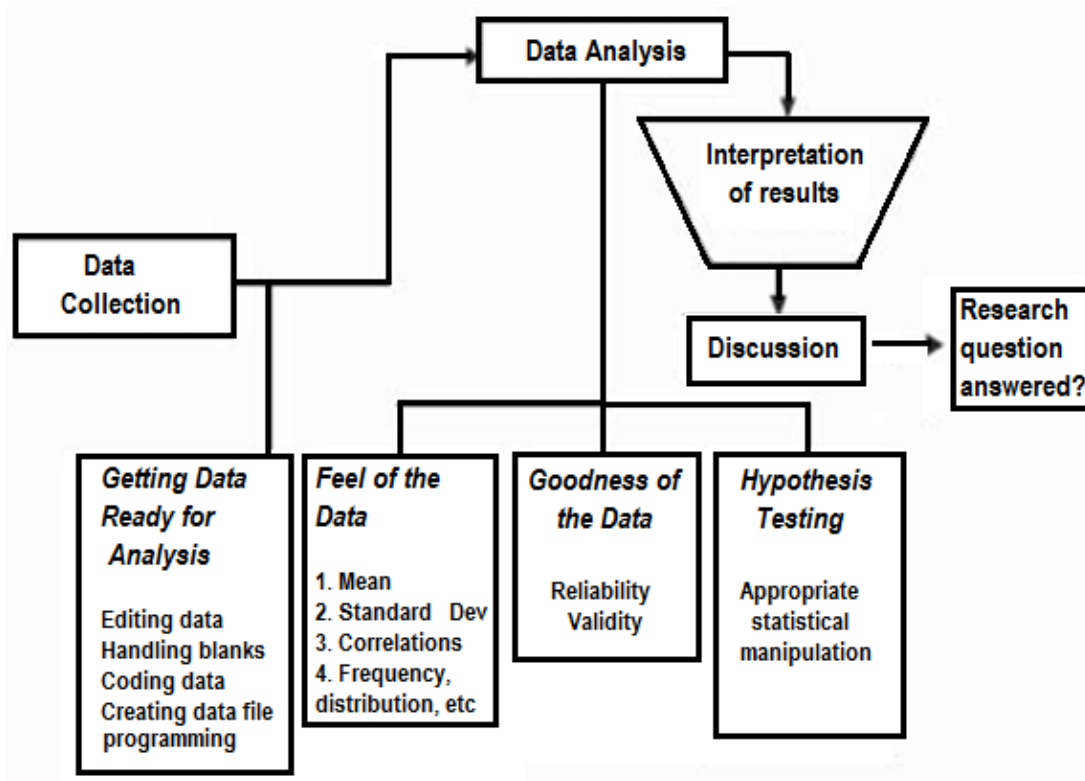


Figure 3.1: Data Analysis Process

Source: Sekaran (2003)

The questionnaires were perused to ensure that it is was not spoiled. The Statistical Programme for Social Sciences (SPSS) package was used for analysis and the findings. Graphs were generated and the statistics were explained and described to be more meaningful.

3.9 Reliability and Validity

It is essential for researchers to ascertain whether their study's findings are of quality standards (Lyons and Doueck, 2010). Validity and reliability are important criteria to establish this. According to Collins and Hussey (2014) validity concerns itself with the establishing whether data collected whether data collected is a true picture of what was being studied whereas reliability usually means dependable or trustworthy. In order to ensure content validity the opinion of experts in the area of focus on the adequacy of research instrument was sought. The

literature gathered for this study was utilised to ensure the reliability of the questions that were inserted in the questionnaire. In addition, the language used was simple and statements were clearly written.

3.10 Limitations of the Study

The study had many limitations. The use of a quantitative approach does not allow for any type of in-depth answers from the selected sample. The sample was limited to only the end users of the Prospecton Brewery. Sourcing information from SABMILLER at the time when they were pre-occupied with a merger proved to be a limitation. It took the respondents approximately twenty one months to return completed questionnaires. After constantly appealing to respondents, only 31 questionnaires were returned. Due to time constraints to complete this study, 31 questionnaires were used to complete the analysis. Hence the findings from this study cannot be generalised to the population of SABMILLER.

3.11 Elimination of Bias

The following was ensured in order to avoid bias (Brynard and Hanekom, 2011):

- Questions should not force a favoured response;
- The sample must be appropriately selected; and
- Accurate and comprehensive questions should be asked.

In addition the language used was simple and clear. Both male and female were included in the study.

3.12 Ethical Considerations

Permission was granted by the Regional Information Systems Manager at SABMILLER (Prospecton Brewery) manufacturing systems to conduct a study with them (Annexure C). Ethical clearance from the University of KwaZulu-Natal, Research Office was also obtained (Annexure D). In addition, every respondent selected was over the age of 18 years and hence could participate. Respondents were informed in the letter that was attached to the questionnaire that their participation was voluntary and their information would be kept confidential. The respondents were also informed that they could withdraw from the study if they felt a need to do so.

3.13 Summary

This chapter has identified this study's research design and justifies the use of the quantitative approach as opposed to qualitative approach. The questionnaire which is typically used in a quantitative approach was selected as the research instrument. All ethical considerations was ensured during this study. The next chapter presents the analysis of the primary findings for this study.

CHAPTER FOUR

ANALYSIS OF DATA, INTERPRETATION AND FINDINGS

4.1 Introduction

This chapter presents the results obtained in this study by analysing the data that was collected for this study. The primary data was analysed through the use of the SPSS and package. The findings are presented in graphs and tables and interpreted to be more meaningful. The findings are aligned to the literature review that was gathered for this study.

4.2 Response Rate

Due to the restrictions from management, only 31 respondents were allowed to complete the questionnaire. All 31 respondents completed and returned questionnaire. The response rate was 100%.

4.3 Reliability Tests

| Reliability Statistics | |
|------------------------|------------|
| Cronbach's Alpha | N of Items |
| .745 | 26 |

Table 4. 1: Cronbach's Co-efficient Alpha: reliability statistics

Reliability: Cronbach's Alpha is greater than 0.7, therefore the findings reveal that the scale was very reliable ($\alpha = 0.745$, $n = 26$).

Twenty six variables were tested which yielded a Cronbach's Alpha of .745. This means that the questionnaire has a higher degree of reliability and that items in questionnaire have a high degree of reliability and the items in the questionnaire have an acceptable level of inter-item consistency.

It should however be mentioned that Annexure H shows that rows coloured in green that could have been rephrased to give a higher result.

4.4 Analysis of Data

Each test item from the questionnaire was analysed and presented in the figures below. Missing values have been analysis and reported in each test item.

4.4.1 Section A: Demographic Information

4.4.1.1 Gender

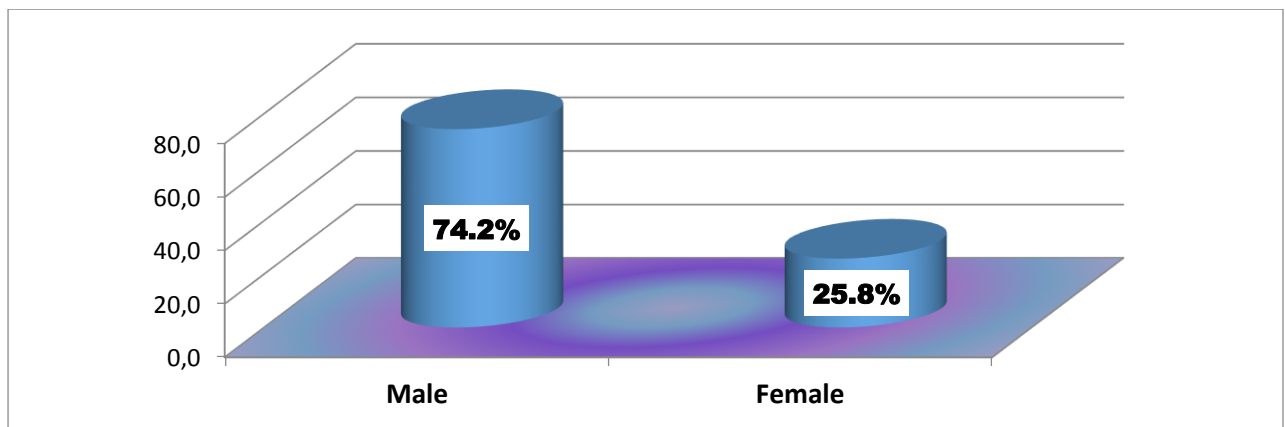


Figure 4.1: Gender of respondents

Figure 4.1 gives an indication that more males (74.2%) participated in the study as compared to 25.8% of female participants.

4.4.1.2 Race Group

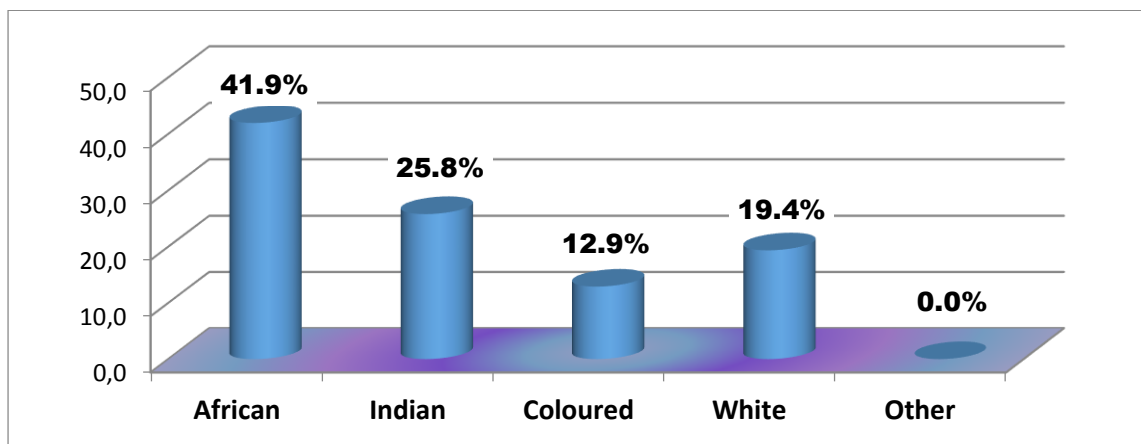


Figure 4.2: Race of respondents

Figure 4.2 indicates that 41.9% of respondents are African, 25.8% constituted Indians, Whites 19.4% and 12.9% are Coloureds.

4.4.1.3 Age Group

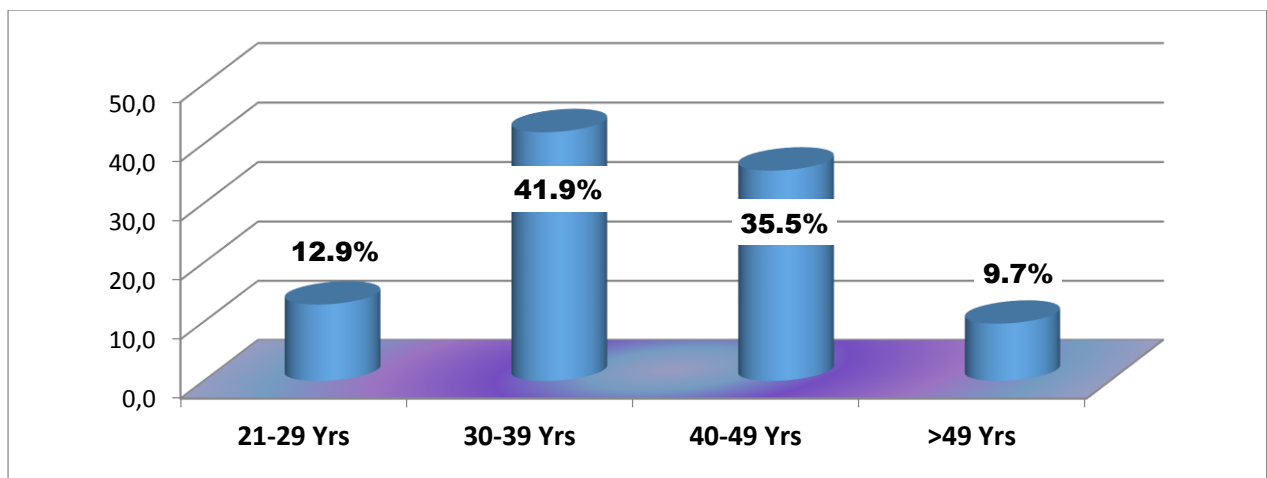


Figure 4.3: Age group of respondents

Figure 4.3 indicates that 12.9% of respondents were in the age category of 21-29 years while 41, 9% of respondents were in the age category of 30-39 years. A further 35, 5% was made up of the age category of 40-49 years whereas 9, 5% was made up of the age category of above 50 years. Maurer and Barbeite (2011:4) argue that there is a dialectical relationship between age and job performance which subsequently impacts on organisational effectiveness. Maurer and Barbeite (2011) further argue that it is essential to manage all four generations in the

workplace, that is, the veterans, the baby boomers, generation X as well as the generation Y (Millenials).

4.4.2 Section B: Research Objective: To Determine the Involvement of Key Stakeholders during the Implementation of the Hybrid ERP System at SABMILLER (Prospecton Brewery)

4.3.2.1 Were you involved in the decision making of the hybrid ERP system at SABMILLER (Prospecton Brewery)

| Stakeholder | Highest Percentage of Involvement |
|------------------------------|--|
| Executives (top management) | 77.4% |
| Administrative | 80.7% |
| Engineering | 68% |
| Finance | 87.1% |
| HR | 74% |
| Legal | 77.4% |
| IT | 74% |
| Supply Chain | 80% |
| Marketing | 74.2% |
| Research and Development | 74.2% |
| Distribution and Warehousing | 95.1% |
| External Consultants | 90.3% |

Table 4.2: Highest percentage of stakeholder's involvement

Table 4.2 indicates the findings from the study that shows which departments were involved in the decision making of hybrid ERP and also the percentage of their involvement. The findings are indicative that the key holders necessary for ERP was involved in the decision making phase. Nah and Delgado (2006), point out executives (top management) support is recognised as one of the key internal CSFs of ERP implementation. Their commitment (in terms of leadership, resources, finance, encouragement, etc.) is necessary throughout the implementation of ERP. In addition, in order for the ERP system to fully integrated and

functional, it is necessary for staff from every department to be actively involved from the decision making to the implementation of ERP.

4.4.3 Section C: Research Objective: To Determine the Benefits of Using Hybrid ERP Systems at SABMILLER (Prospecton Brewery)

This section attempts to determine the benefits of using hybrid ERP systems.

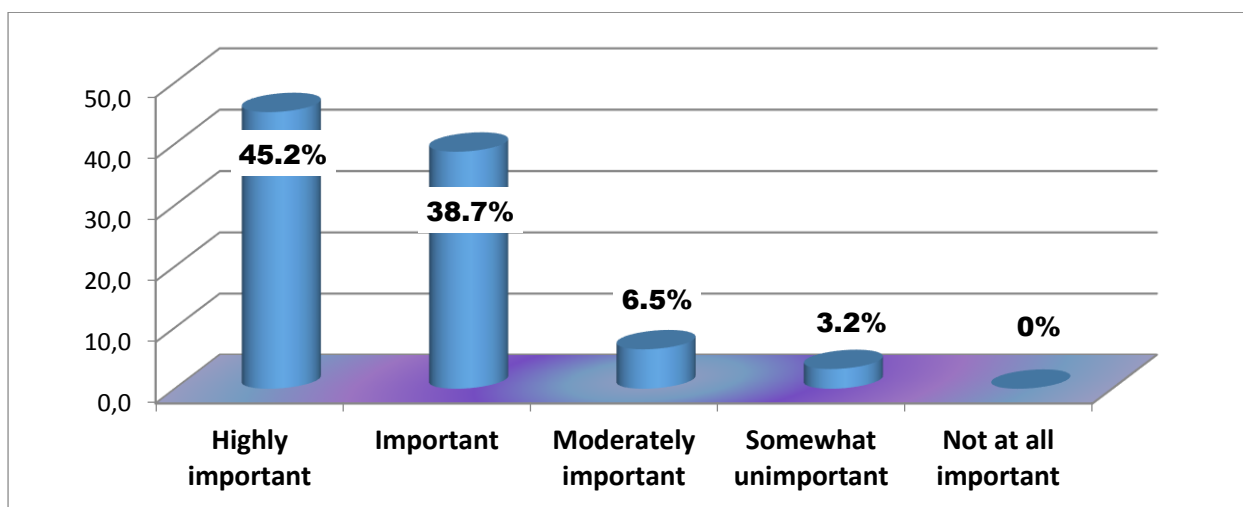


Figure 4.4: Hybrid ERP increases integration

According to Figure 4.4, the majority (45.2%) of the respondents indicated ‘highly important’ to the statement that hybrid ERP increased integration. A further 38.7% of the responses indicated that it was important. Six point five percent (6.5%) indicated that increased integration was only moderately important to be attained whereas 3.2% of respondents indicated that increased integration at the brewery was somewhat unimportant. Missing values = 6.4%.

Cooke, Guha and Filsoof (2013) posit that the integration of the old and new applications into becoming “hybrid ERP” systems enables specific business functions such as supplier management, re-order period and lead time of inventory to operate with greater agility as opposed to what could be attained in old-style IT organisation. Hoots and Wiley, (2015) add that the pivotal role of the hybrid ERP system is to engage customers, suppliers and employees for the business enterprise. In addition, the hybrid ERP system enables companies to integrate

their business processes and all information relevant to their organisation in order to improve their communication and real time (Nah and Delgado, 2006).

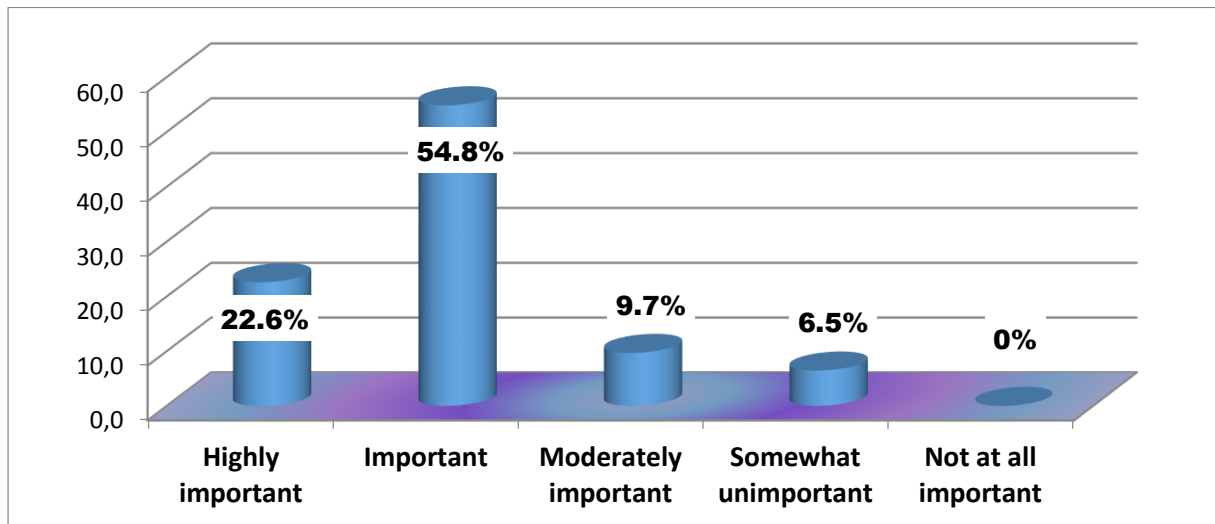


Figure 4.5: Hybrid ERP reduces the number of software tools required to support manufacturing systems

Figure 4.5 shows that the majority of respondents (54.8%) indicated that hybrid ERP reduces the number of software tools required to support manufacturing systems. A further 22.6% of the respondents responded that it was highly important, 9.7% found it moderately important, while only 6.5% saw this as somewhat unimportant. Missing values = 6.4%. Tsamantantis and Kogetsidis (2006) point out that the ERP concept came into existence in order to form a comprehensive system which integrated all functional areas and transactional processing activities in the business enterprise in its entirety.

Yu (2007) adds that the ERP system allows for information to be kept on one software system which brings convenience and increases communication in the entire company. In addition the use of one software allows for staff to keep track of orders more easily, coordinate inventory and shipping and manufacturing amongst many different location simultaneously.

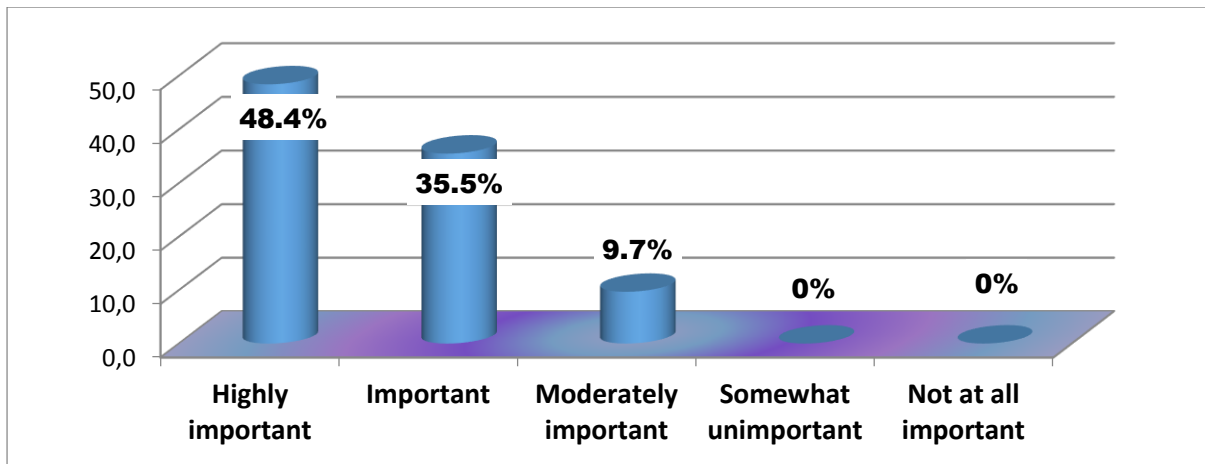


Figure 4.6: Hybrid ERP increases accessibility and quality of product support

Figure 4.6 reveals that a collective majority (83.9%) of the respondents indicated that hybrid ERP increases the accessibility and quality of product support. Missing values = Missing values = 6.4%. Ngai, Law and Wat (2008) mention that ERP systems is the catalyst that improves business work efficiently and significantly, increases productivity and service quality which ultimately leads to a reduction in operations cost as well as effective decision-making.

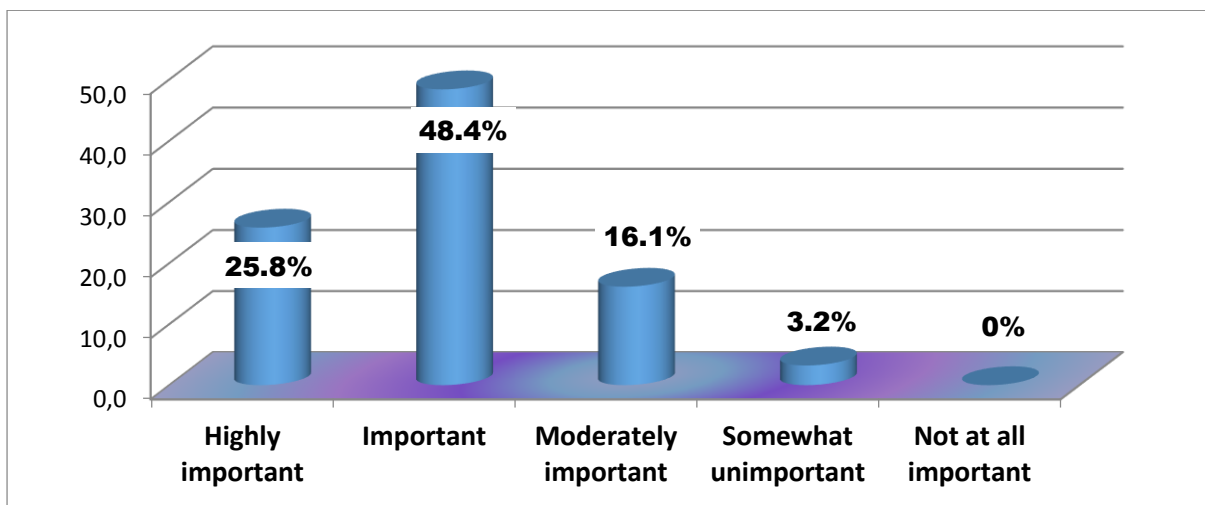


Figure 4.7: Hybrid ERP increases adaptability and flexibility of software

According to Figure 4.7, a collective 74.2% of the respondents indicated that hybrid ERP increases adaptability and flexibility of software. A further 16.1% of the respondents found it moderately important, while 3.2% saw this as somewhat unimportant. Missing values = 6.5%. Chang *et al.* (2008) point out that effective ERP systems improve a company's adaptability and flexibility which greatly influences successful supply chains.

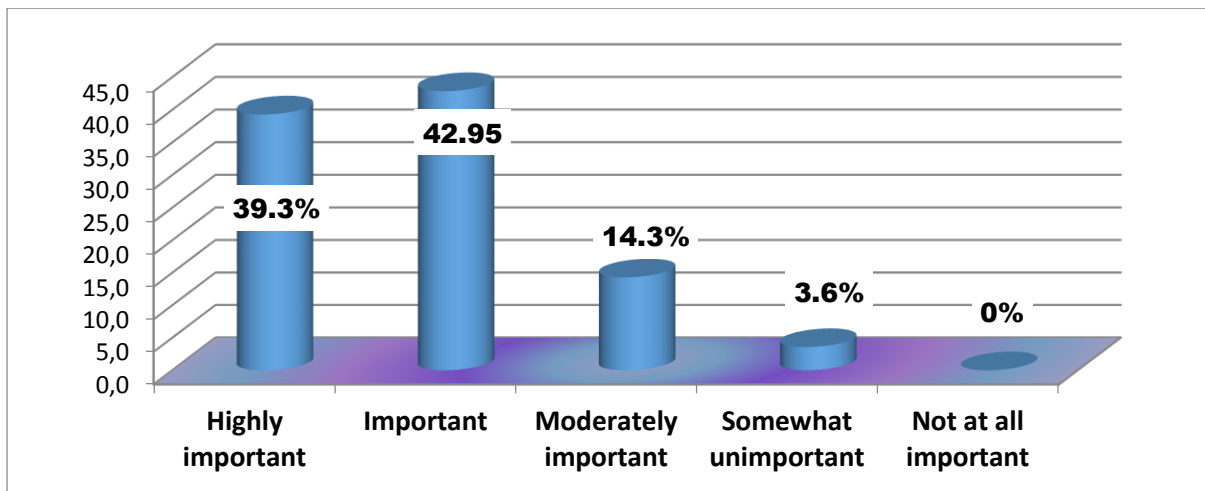


Figure 4.8: Hybrid ERP has compatibility with existing hardware

In Figure 4.8 it can be seen that a collective 82.25% of the respondents indicated that it is important for hybrid ERP to be compatible with existing hardware, 14.3% consider it moderately important, whilst 3.6% consider it somewhat unimportant. According to Martin and Cheung (2005) in order for hybrid ERP systems to be compatible with existing hardware some degree of BRP needs to be undertaken in the implementation stage. Hwang (2011) highlights that when a company's business processes are efficient, they can be more competitive in the marketplace.

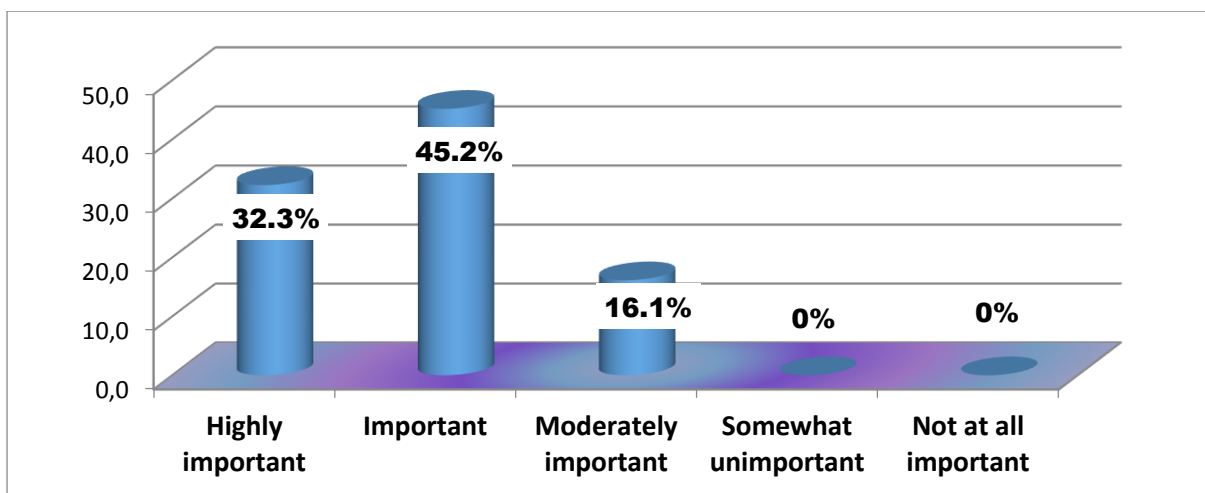


Figure 4.9: Hybrid ERP's compatibility with the existing operation software

Figure 4.9 indicates a collective majority of 77.5% of the respondents who indicated the importance of hybrid ERP being compatible with the existing operation software. Only 16.1%

of respondents saw this as moderately important. Missing values = 6.4%. Hwang (2011) mentions that unlike other software, in order for the successful implementation of ERP there needs to be a configuration of organisational processes that fits the basic business practices that are embedded in such application packages. Lee, Lee and Lin (2007) indicates that companies that encompass higher level of technical infrastructure can be expected to master the technical aspects of business and contribute more to performance than firms with a lower level of technical infrastructure.

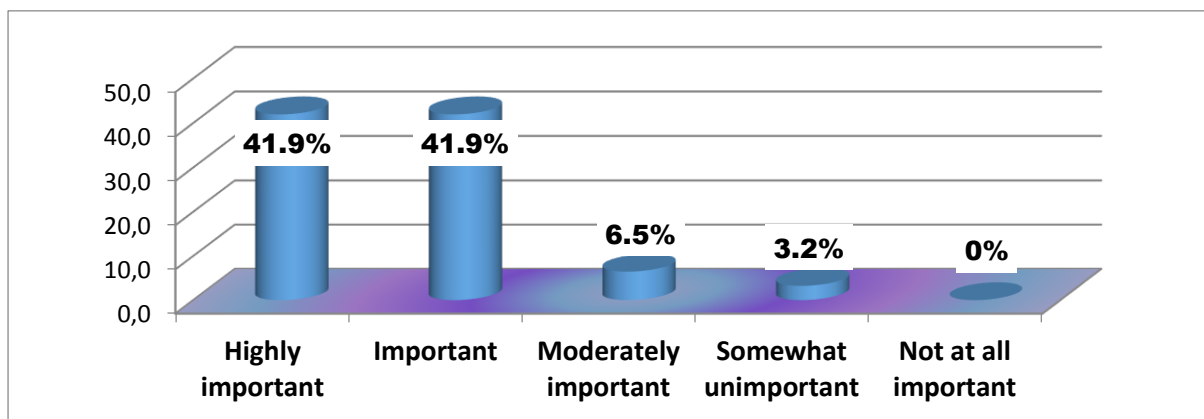


Figure 4.10: Hybrid ERP is consistent with interface and user-friendly operations

Figure 4.10 reveals that 41.9% of the respondents rated the above statement as highly important whereas another 41.9% rated it important. A further 6.5% rated the above statement as moderately important, whilst 3.2% responded ‘somewhat unimportant’. Missing values = 6.5%. One of the objectives of ERP is to deliver value-adding solution to end users (Yu, 2007). Hoots and Wiley (2015) add that a driving force behind hybrid ERP is a demand for better end-user experience. Hence, an improvement in organisational performance leads to better customer service (Nah and Delgado, 2006).

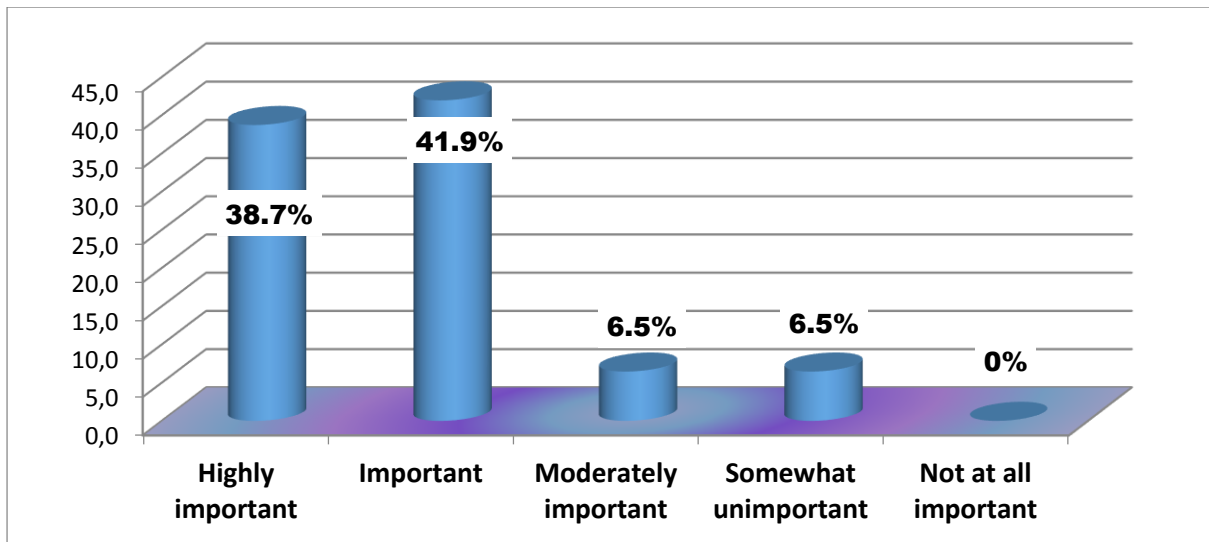


Figure 4.11: Hybrid ERP is easily understood and is a well-designed business decision-making support information system

In Figure 4.11 it can be seen that a collective majority of 80.6% of the respondents rated important to the statement that hybrid ERP is easily understood and is a well-designed business decision-making support information system. A further 6.5% responded to the above statement as moderately important with the remaining fraction (6.5%) responded that it was somewhat unimportant. Missing values = 6.4%. Hwang (2011) points out that ERP systems provides enhanced accessibility to data which enables management to have up-to-date access to information for decision making and managerial control. In addition, an ERP system helps track actual costs of activities and perform activity based costing.

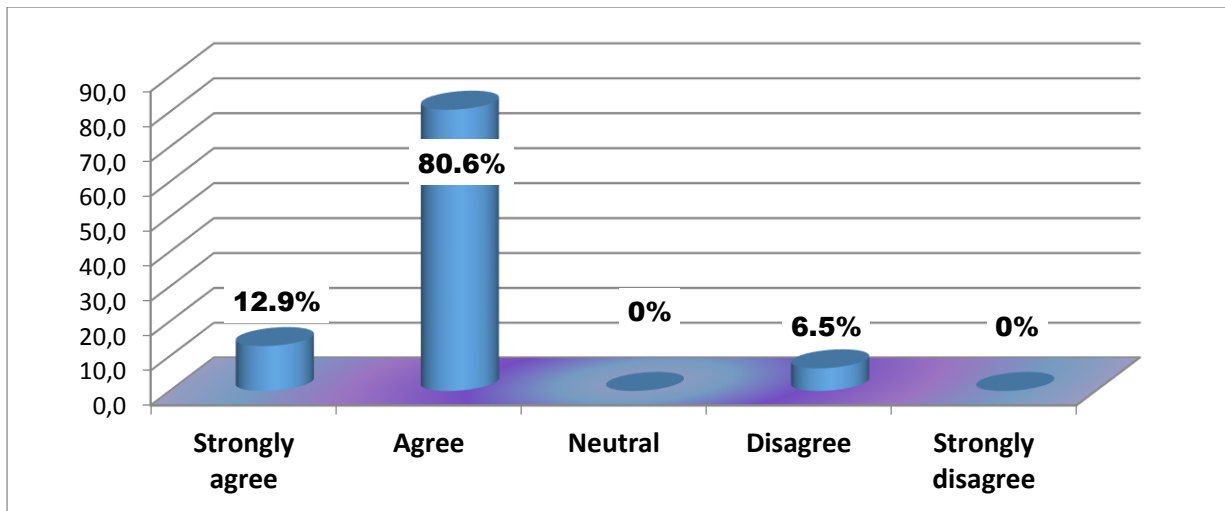


Figure 4.12: Inventory planning has improved significantly through hybrid ERP

Figure 4.12 indicates that 93.5% (majority) of the respondents agreed with the statement, whilst only 6.5% disagree. Tsamantanis and Kogetsidis (2006) mention that the need for the ERP system arose as a result of companies wanting to control the actual as well as the assumed inventory levels.

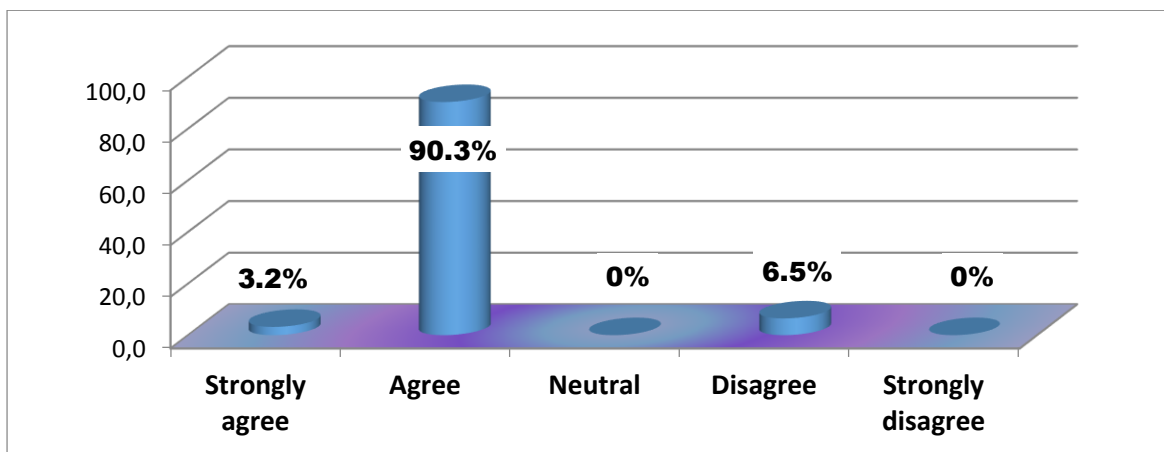


Figure 4.13: Raw materials planning became optimum as a result of hybrid ERP installation

Figure 4.13 illustrates that majority of respondents agree with this statement. An overwhelming collective 93.5% agree that raw materials planning of the brewery became optimum after the implementation ERP systems whilst only 6.5% argue otherwise. ERP encompasses the

planning and managing of the company's raw materials and resources in the most efficient, productive, and profitable manner (Barker and Frolick, 2003). Trott and Hoecht (2004) add that the benefits of hybrid ERP systems are linked to effectiveness and efficiency of business processes because companies can get more accurate and timely information.

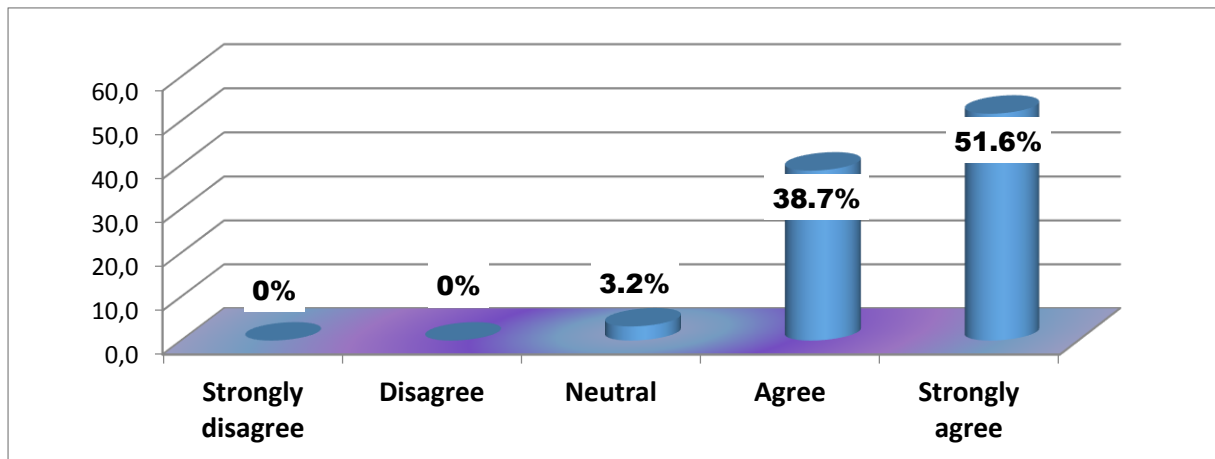


Figure 4.14: ERP has improved the company's efficiency

Figure 4.14 illustrates that a collective majority (90.3%) of the respondents agree with this statement while 3.2% remained neutral. Missing values = 6.5%. Dennis, Wixon and Roth (2006) argue that users can achieve specified goals in relation to the accuracy and completeness if they were to be acquainted with resources expended in relation to specified goals in a particular environments. Basolgu, Daim and Kerimoglu (2007) add that a company that implements an ERP system can have benefits such as fast and accurate information gathering, quick decision making, low inventory cost, improved interaction with customers, and improved product quality. The results are indicative that hybrid ERP system has improved the company's efficiency.

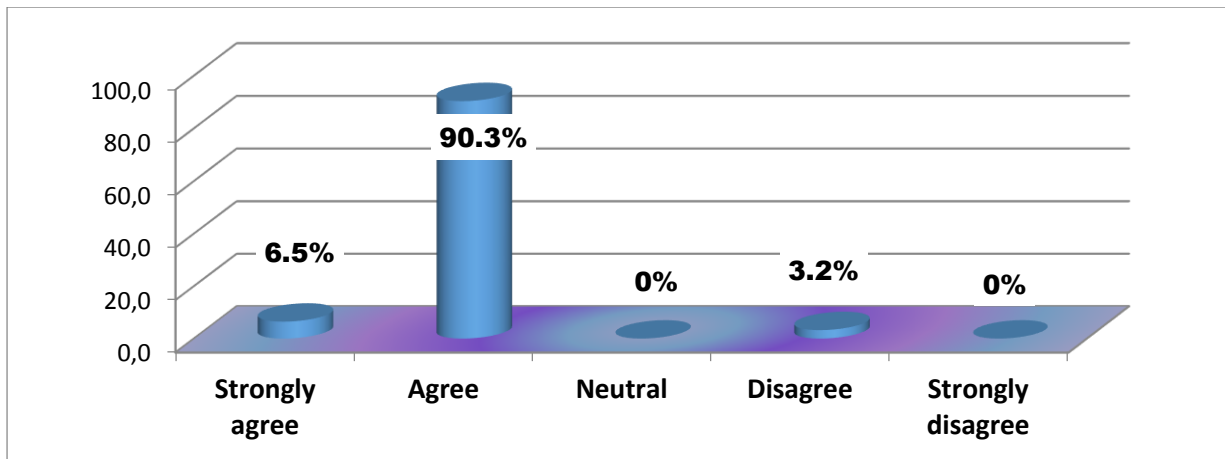


Figure 4.15: Hybrid ERP makes manufacturing systems to have optimum back-up

Figure 4.15 illustrates that a collective 96.8% of the respondents agree with the above statement while only 3.2% disagree. According to Hoots and Wiley (2015), data is posted to hybrid ERP once its quality has been checked by the back office passive data governance solution which ensures data integrity is maintained in the production environment. Hoots and Wiley (2015) also mentions that the service level agreement is monitored by users to identify violations or check data error reports, which ultimately leads to an optimum back-up of a company's manufacturing systems.

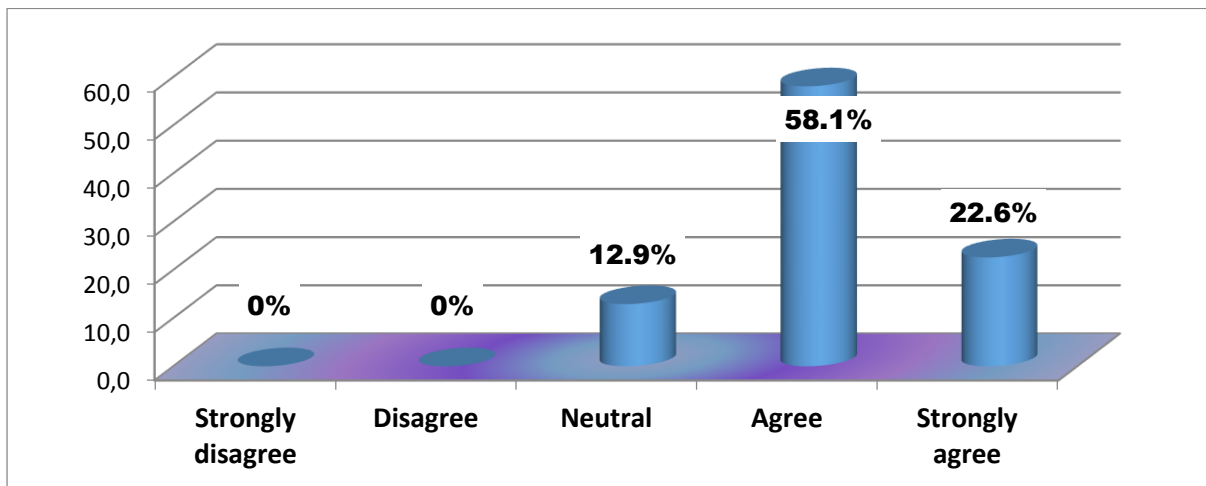


Figure 4.16: Overall satisfaction with the software

Figure 4.16 reveals that a collective majority of the respondents (80.7%) indicated their agreement with the overall satisfaction of the software. A further 12.9% of the respondents

remained neutral. Missing values = 6.4%. Cooke, Guha and Filsoof (2013) point out that the ERP system provides overall satisfaction to any company in that the benefits includes customer engagement, procurement management, employee engagement as well as the implementation speed.

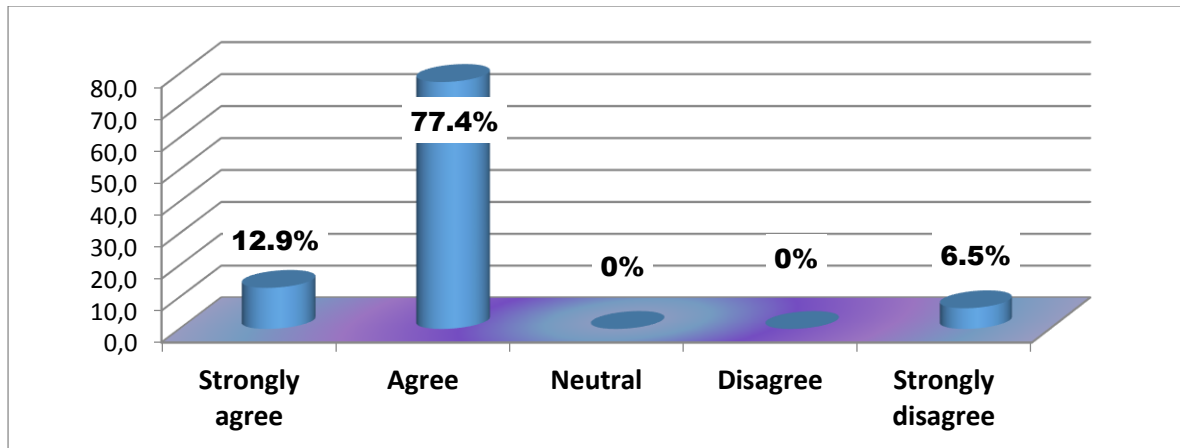


Figure 4.17: Interdepartmental systems integration have improved significantly

Figure 4.17 indicates that a collective majority of 90.3% of respondents agree with the statement with only 6.5% strongly disagreeing. Missing values = 3.2%. Pieterse (2010) points out that the ERP software package that enables business enterprise's departments to work in cohesion to achieve similar organisational strategic goals and objectives which ultimately improves the integration amongst interdepartmental systems. The findings have indicated that the majority (90.3%) of the respondents are in agreement that interdepartmental systems integration have improved significantly.

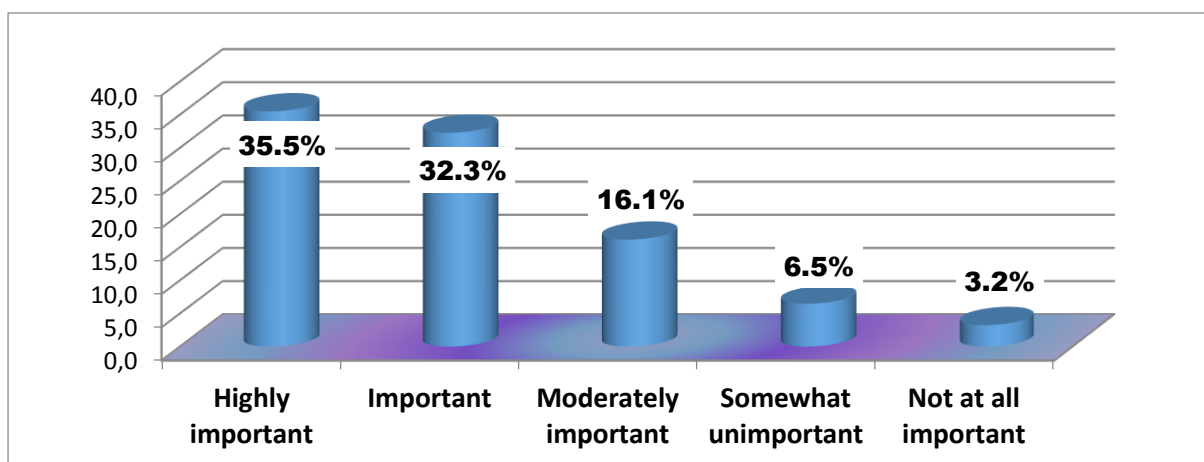


Figure 4.18: Hybrid ERP reduces dependency on a number of key employees

Figure 4.18 indicates that 35.5% of the respondents mentioned highly important, 32.3% mentioned important to the statement that hybrid ERP reduces dependency on a number of key employees. A further 16.1% of the respondents indicated that it was moderately important, 6.5% concede that it was somewhat unimportant whilst only 3.2% concede that it was not at all important. Missing values = 6.4%. Sarker and Lee (2003) indicate that the three social enablers to the success of ERP is a strong and committed leadership, open and honest communication, and a balanced and empowered implementation team. Nah, Lau and Kuang (2003) add that the presence of a project champion is needed in order to ensure the efficiency of the ERP implementation.

4.4.4 Section D: Research Objective: To Determine the Challenges that SABMILLER (Prospecton Brewery) Encountered during the Utilization of the Hybrid ERP System

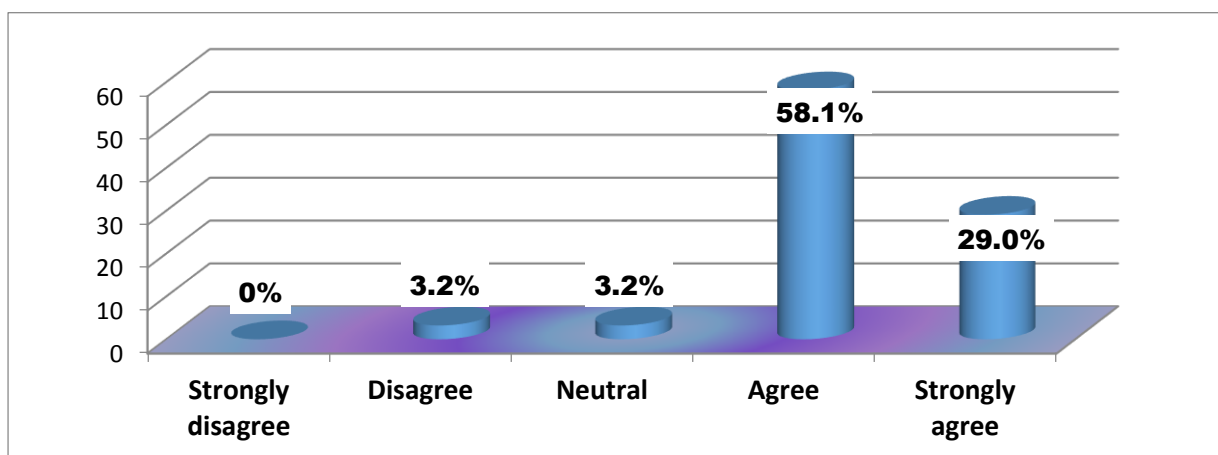


Figure 4.19: Time taken to gain confidence in the ERP system

According to Figure 4.19 reveals that the majority of 58.1% of the respondents agreed, 29% strongly agreed, 3.2% disagreed, whilst 3.2% remained neutral to the statement that it took a long time to gain the confidence for the system to go live. Missing values = 6.5%. Davenport (2000) mentions that the major elements of a rational approach to implementing an ERP system is to not only prepare the technical system, but also the employees must be prepared. Bradley (2008) points out that user training has a positive effect of the successful implementation of the system. Hence preparing the employees is about training which ultimately builds their confidence before they utilise the system (Abdinnour-Helm, Lengnick-Hall, and Lengnick-Hall, 2003).

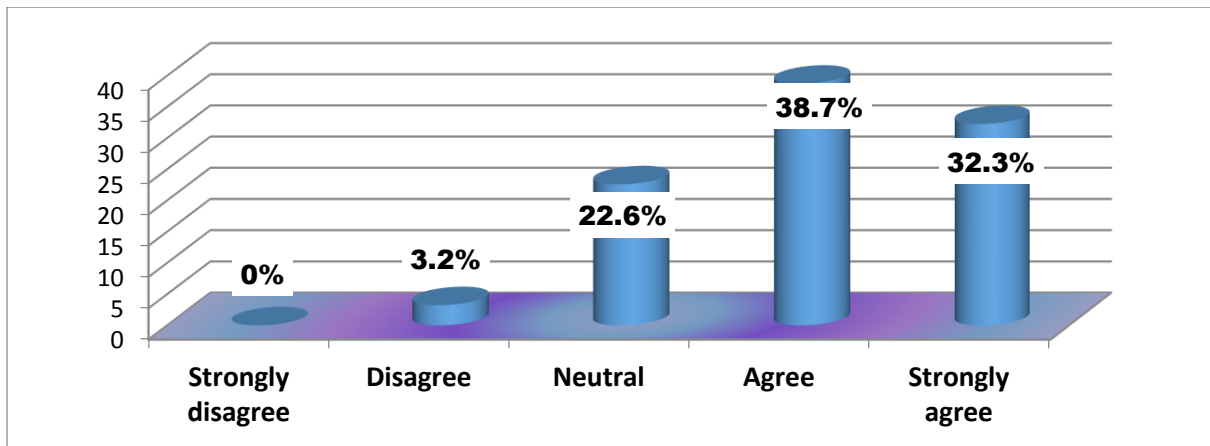


Figure 4.20: It took a long time to import data into the ERP system

As per Figure 4.20, 38.7% of the respondents agreed, 32.3% strongly agreed, 22.6% remained neutral, whilst 3.2% disagreed to the statement that it took a long time to import data into the ERP system. Missing values = 3.2%. Ibrahim (2010) indicates that importing data into the ERP system can take a long time. He adds that from the implementation phase it is a very complicated process as it can take long time with a lot of planning and consultation, hence data that needs to be inserted needs to be verified constantly by all departments of the supply chain process. Hence, EPR can take months to implement ERP system and years to acquire the desired benefits from the system (Mohmed Al-Sabaawi, 2015).

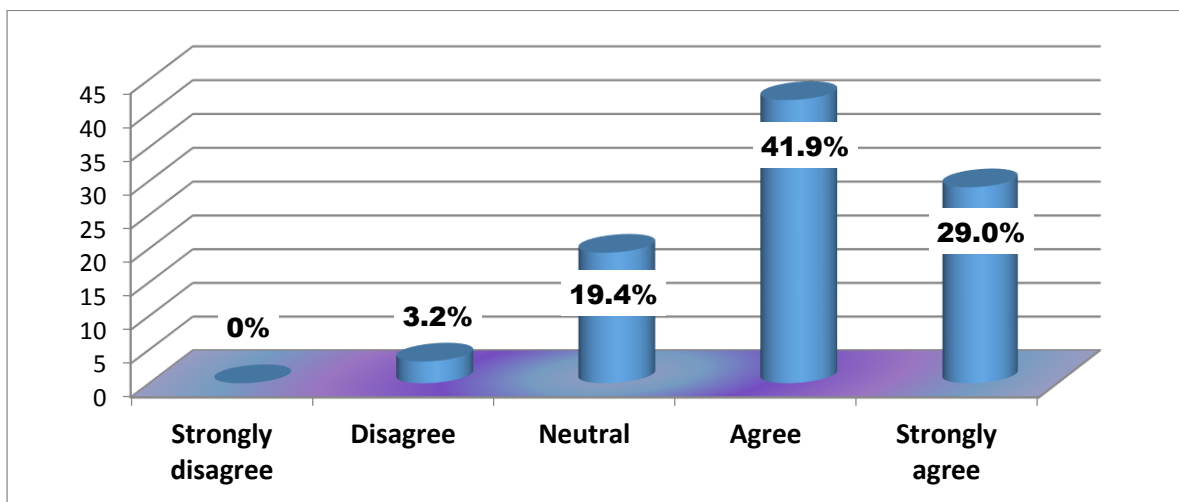


Figure 4.21: Some modules bought were never used in this company

According to Figure 4.21, a collective majority of the respondents (70.1%) agreed that some modules bought were never used in this company. A further 19.4% remained neutral and 3.2%

disagreed to the above statement. Missing values = 6.5%. Tsamantatis and Kogetsidis (2006) point out that it is essential for the companies to carefully and strategically select the ERP modules they would need to embed in accordance with their organisational needs, dynamics and processes. Ngai, Law and Wat (2008) highlight that amongst ERP complexity, there are exorbitant high costs involved in its implementation.

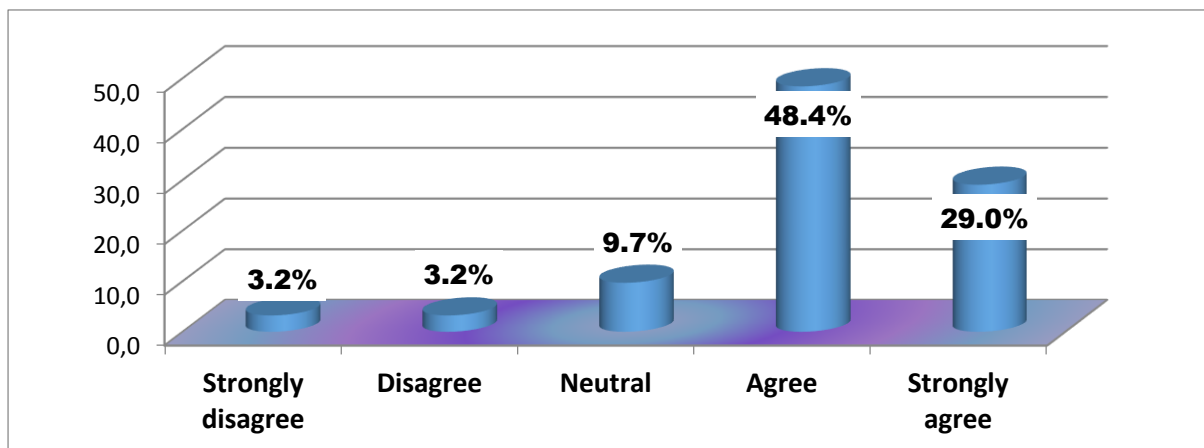


Figure 4.22: The software interface is not intuitive and very difficult for non-computer literate people to use

Figure 4.22 indicate that 48.4% of the respondent agreed with the above statement, 29% strongly agree, 9.7% remained neutral, whilst 3.2% disagreed and strongly disagreed respectively. Missing values = 6.5%. Jafari, Osman, Yussuf and Tang (2006) mentions that ERP systems can be complicated in that there are three areas that concern the contents of training namely logic and concept of ERP, features of the ERP system software and hands-on training. Many staff especially those who are older are resistance to change when it comes to dealing with computers, hence it would be challenging to grasp the three (not just one) areas of concern in order to ensure the effectiveness and efficiency of the ERP system.

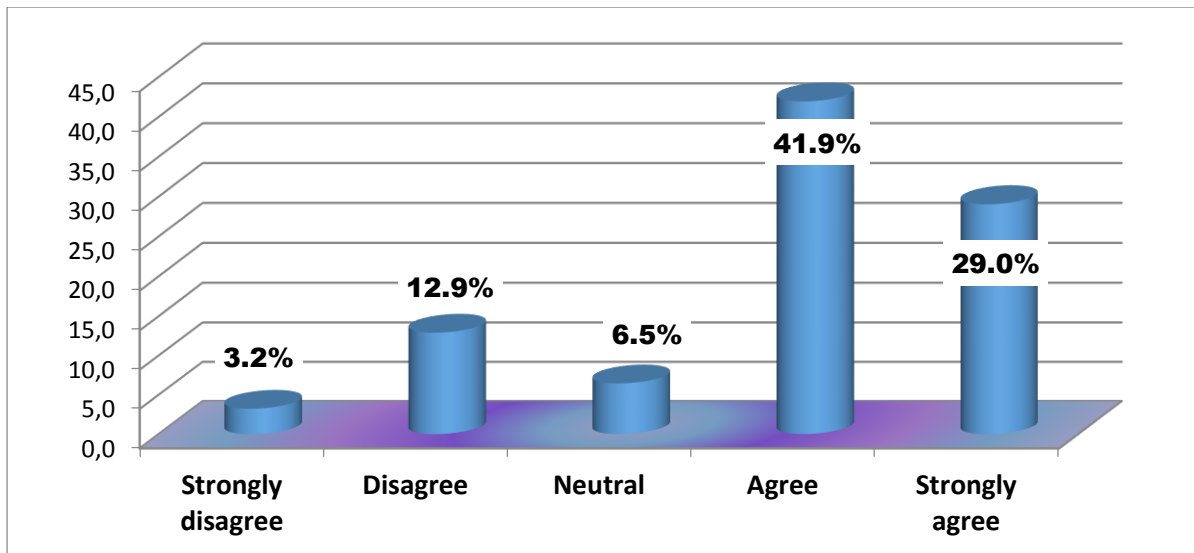


Figure 4.23: Poor level of vendor support

Figure 4.23 illustrates that 41.9% of the respondents agree with the statement that there is a poor level of support from the software providers. A further 29% of the respondents strongly agreed, 3.2% strongly disagreed, 12.9% disagreed, whilst 6.5% remained neutral to the above statement. Missing values = 6.5%. Bhatti (2002) mentions that the project leader should be able to work with all departments to understand their concerns and deal with issues as they arise. This will include if there is poor support from the vendors as indicated by the respondents.

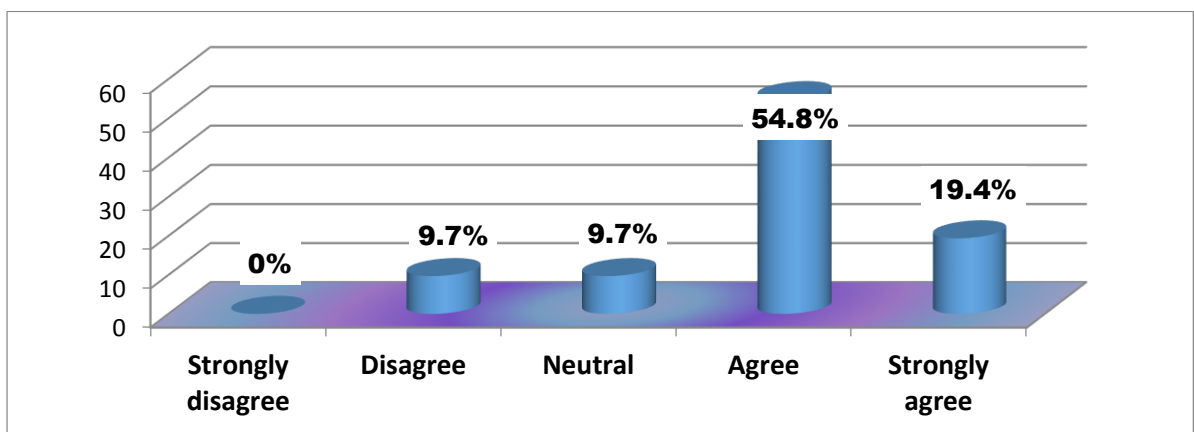


Figure 4.24: The system does not function to the expectations as promised by the software vendor

Figure 4.24 indicates that 54.8% of the respondents agreed, 19.4% strongly agreed, 9.7% disagreed, whilst 9.7% remained neutral to the statement that the system does not function to

the expectations as promised by the software vendor. Missing values = 6.4%. Hoots and Wiley (2015) highlight that users are able to engage in data maintenance activities such as creating, copying, updating, blocking and deleting a master record for financial, material, vendor as well as customers' data. This is indicative that the ERP system can add value to the company. However, vendors must keep to their promise of offering assistance to the users wherever needed in order to gain optimisation of the system. The company should investigate the reasons why the respondents indicated that the system does not function to the expectations as promised by the software vendor in order to ensure the full benefits of the system.

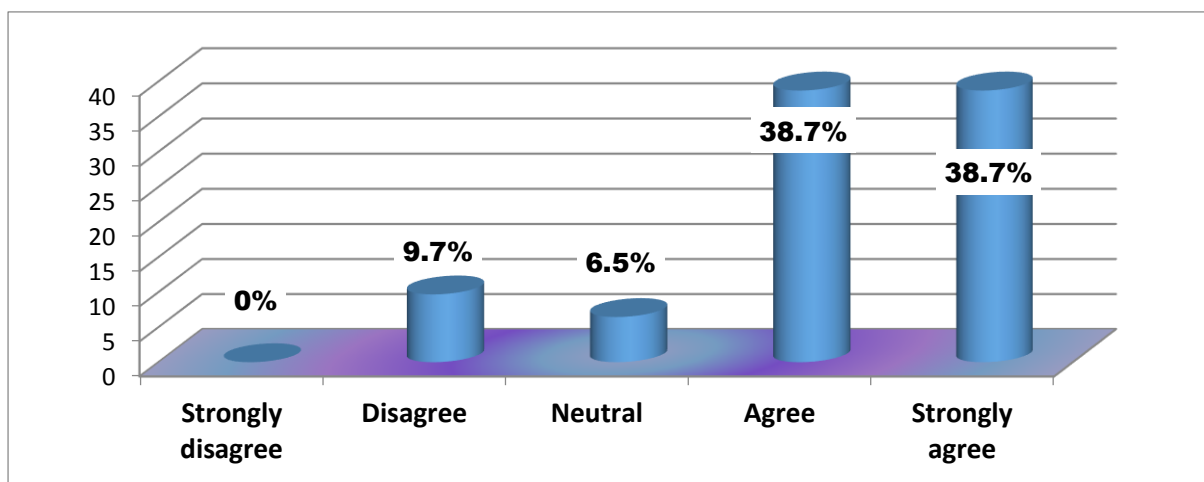


Figure 4.25: ERP's training programme was long, complex and not very cost effective

According to Figure 4.25, 38.7% of the respondents strongly agreed, 38.7% agreed, 9.7% disagreed, whilst 6.5% remained neutral to the statement that the ERP training programme was long, complex and not very cost effective. Missing values = 6.4%. Yu (2007) maintains that one of the objectives of the ERP system is to be cost effective through an effective training programme that satisfies the end user. However, Schindler and Kragemmergaard (2010) and Ngai, Law and Wat (2008) have found that in their study respondents indicated that the training programme for the EPR system was complex, time consuming and costly. In addition, their studies also found that some of the training was inappropriate, hence became too long.

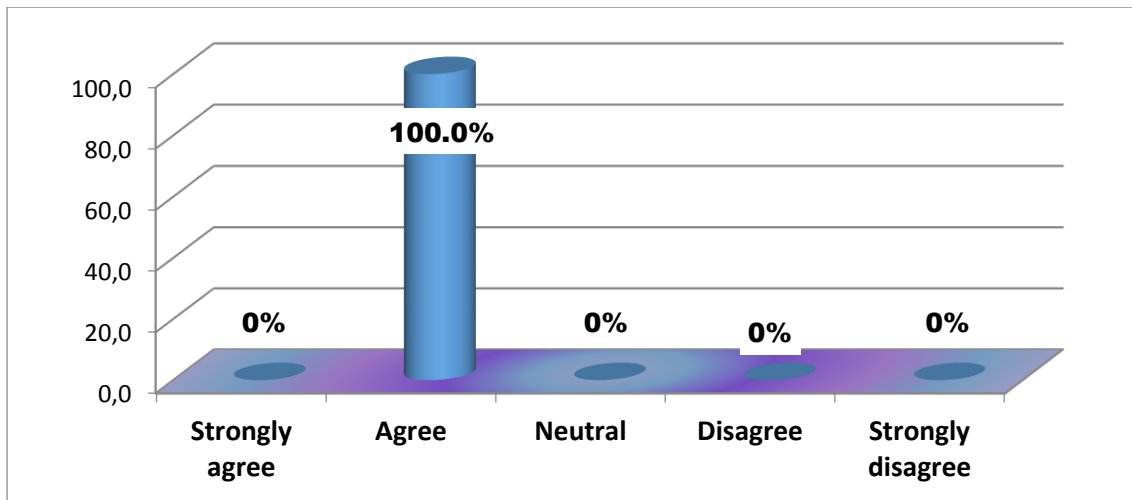


Figure 4.26: The level of ERP training increased the performance of the users

Figure 4.26 illustrates an exceptional indication in that all respondents (100%) agree with the statement. When new systems need to be implemented it is essential that users receive applicable training as they may not be in the same level of understanding with systems developers (Dennis, Wixon and Roth, 2006).

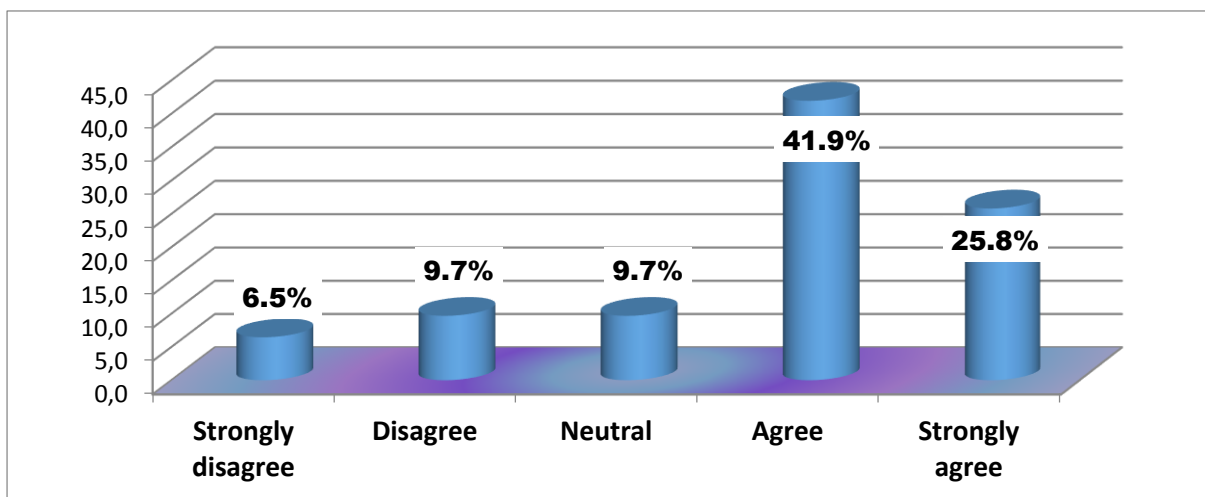


Figure 4.27: There was a great resistance from employees to the new software

Figure 4.27 indicate again that a collective of 67.7% agree with the statement while 9.7% remained neutral, 9.7% disagree whereas 6.5% strongly disagree that statement that there was

a great resistance from employees to the new software. Missing values = 6.4%. Thompson, Strickland and Gamble (2005) argue that organisations could not expect their strategy to be successfully implemented without the support of their most important stakeholders, the employees. It is often emphasised that people resist change due to fear of the unknown, concern over personal loss as well as the fear of replacing labour intensive manufacturing with machines or robots (Robbins, 2010). In addition, Loh and Koh (2004) highlight that effective communication is necessary between top managers and employees to ensure that there is no resistance in the implementation of the ERP system.

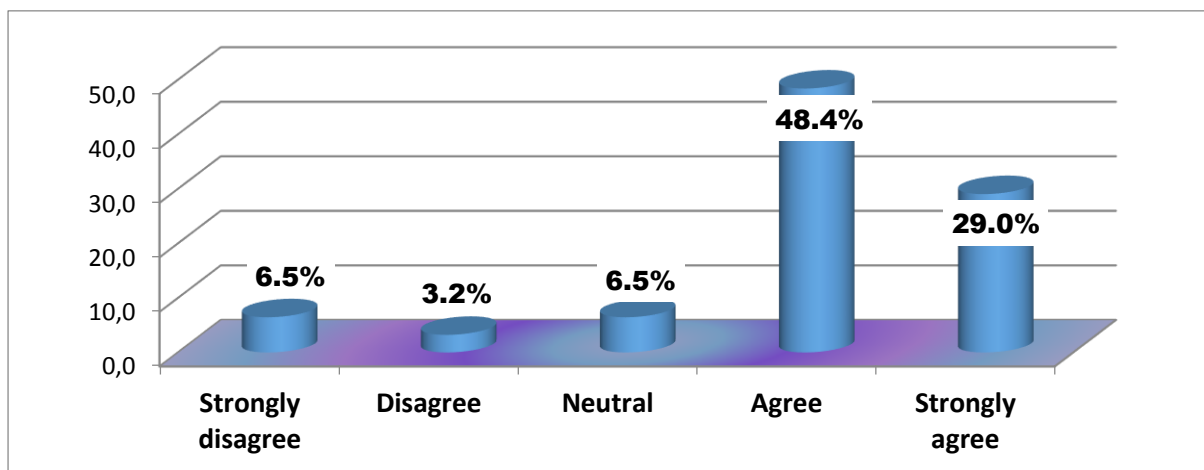


Figure 4.28: Lack of effective project management in the implementation of ERP software

Figure 4.28 shows that the majority of respondents (48.4%) agreed, 29% strongly disagreed, 6.5% strongly disagreed, and 3.2% disagreed, whilst 6.5% remained neutral to the statement above. Missing values = 6.4%. The need for a project manager is a CSF in the successfulness of ERP implementation (ALdayel and Al-Mudimigh, 2011). Project management involves the use of skills and knowledge in coordinating schedules and to monitor activities in order to ensure ERP project objectives are achieved (ALdayel and Al-Mudimigh, 2011). According to Markus and Tanis (2000) the project leader must be involved completely from the chartering phase of the ERP system. However, a project leader must be given clear guidelines order to execute the objectives of ERP at the company.

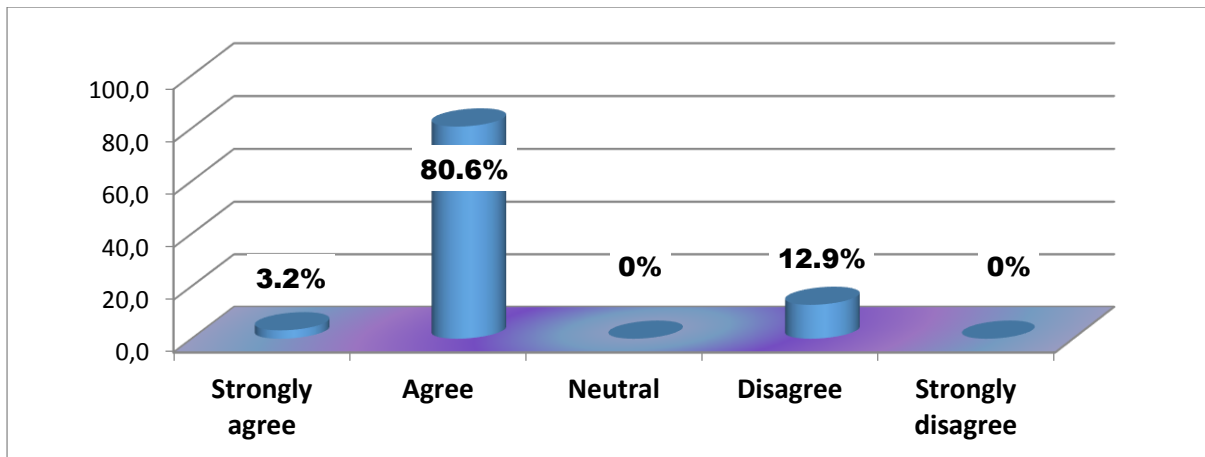


Figure 4.29: Business process re-engineering is practically feasible in a cost effective way

Figure 4.29 indicates the findings for the above statement. The findings reveal that 80.6% of the respondents indicate their agreement, 3.2% strongly agree, whilst 12.9% disagree to the statement that business process re-engineering is practically feasible in a cost effective way. Missing values = 3.3%. Business process re-engineering means changing the fundamental mechanisms in which business enterprise operates (Dennis, Wixon and Roth, 2006). It may subject users to new ways of adapting to drastic and rapid changes with an intent to take advantage of new technology (Dennis, Wixon and Roth, 2006). This means that BPR process becomes practically feasible and saves cost in the implementation of ERP. Soja (2006) point out that BRP is one of the CSF in the implementation of the ERP system.

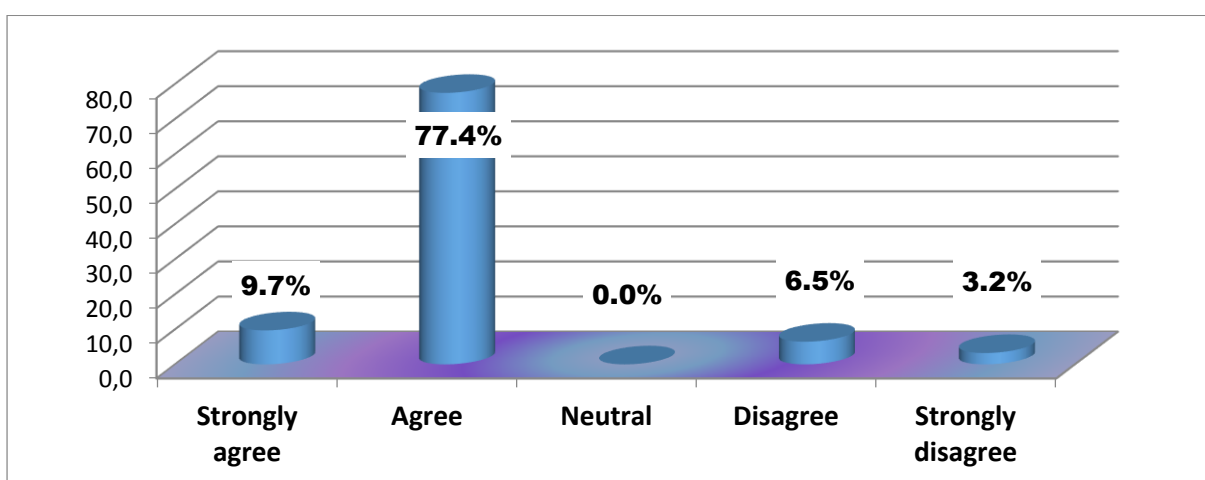


Figure 4.30: Efficacy of hybrid ERP is dependent on key personnel from the IT/Manufacturing systems

Figure 4.30 reveals that 77.4% of the respondents agree, 9.7% strongly agree, 6.5% disagree whilst 3.2% strongly disagree to the statement that the efficacy of the brewery's hybrid ERP system depends on the key employees from the IT/Manufacturing Systems department. Missing values = 3.2%. Somers and Nelson (2004) point out that it is imperative that a company has technological readiness (IT skills and IT infrastructure) for any successful completion of IT projects. If the hybrid ERP system has to be efficient, the company must take cognisance of the fact that there needs to be an increase in their investment in the training of IT/manufacturing key personnel, which ultimately improves the efficiency and responsiveness of operations (Wickramasinghe and Karunasekara, 2012).

4.5 Chi-squared (χ^2) test statistics discussion

The results presented in Annexure I, which shows that there is a significant relationship between gender and the following statement:

- Its operations should be centrally controlled: $p = 0.004$. In addition, Annexure H, shows there is a significant relationship between age and the following statement:
- Hybrid ERP makes manufacturing systems back-up optimum: $p = 0.042$.

Further to that, Annexure I, shows there is a strong relationship between department and the following statements:

- We did not have effective project management when implementing this software: $p = 0.007$.
- I would like to become a professional in ERP system: $p = 0.019$.
- It has enabled manufacturing system trends (dynamic and static) by end-users throughout the plant: $p = 0.003$.
- Interdepartmental systems integration processes have improved significantly: $p = 0.006$.
- Business process re-engineering (BPR) is practically feasible in a cost effective way: $p = 0.045$.

The association between column variables [gender, race, age group and department] and the other statements in Annexure I is not statistically significant at the 95% level ($p>0.05$). The above reflected results supported the results in the data analysis process.

4.6 Summary

The findings were presented in this chapter. The findings allow for recommendations to be made on best practice for ERP systems. The findings have answered the research questions and objectives that were formulated for this study. The findings have revealed that although there are many benefits to the implementation of the ERP system at SABMILLER (Prospecton Brewery), there are still challenges that the company needs to address. The next chapter concludes the study with a summary of the findings and recommendations that should be implemented.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The aim of this research was to investigate the end-users' perspectives of the efficacy of hybrid ERP at SABMILLER (Prospecton Brewery). The conclusions and recommendations are presented in this chapter. The recommendations are grounded on the analysis of the primary and secondary data collected for this study.

5.2 Summary of the Research Findings

The findings of this research indicate that the key stakeholders (Table 4.1) have been involved in the decision making of the hybrid ERP system at SABMILLER (Prospecton Brewery). In order to be successful the implementation of ERP must be driven by key stakeholders which in turn increases the company's performance. The majority of the respondents (Figure 4.4) have indicated that hybrid ERP increases integration. The main purpose of the hybrid ERP system is to allow a company to integrate their business processes and all information relevant to their organisation in order to improve their communication and real time.

Since the information of the entire company is kept on one software system the employees from the various locations to simultaneously keep track of orders more easily, coordinate inventory, shipping and manufacturing. As clients become more demanding, companies should increase their capabilities to improve their organisational performance which will ultimately satisfy the needs of the clients.

The objectives of this study have been met and the research questions have been answered. Literature has indicated that the implementation of the ERP system has many benefits and challenges as discussed in this study. However, companies should take cognisance of CSFs in order to ensure that the benefits of the system are achieved. It is also critical for all key stakeholders to be involved from the start of the decision to implement ERP as this enables the

company to make the right decision in terms of selecting the modules that are necessary to link the entire company.

5.3 Recommendations

From the findings of this study, the following are recommended:

5.3.1 Training and Retraining of Information Technology Department Personnel

In order to ensure the success of the ERP system, it is recommended that the IT personnel be trained and retrained. The trained IT employees should in turn have regular training programmes with every end user with the company in order to maintain the success of the system. When employees are trained and retrained, they will have confidence in the system and will not resist the change.

5.3.2 Project Manager

One of the CSFs of the ERP system is the need for a project manager. The findings are indicative that there is a project manager (see Figure 4.29). However, it seems that this role is not fully functional. It is therefore recommended that the project manager should be informed by management and the ERP vendors of the importance of his or her role and responsibilities. The project manager should ensure that meetings are held with the various departments at least once a week to find out their concerns (if any) and filter this to the vendors. This will assist in ensuring that the hybrid ERP system operates at its optimal level.

5.3.3 Vendor Support

The majority of the respondents have indicated that vendor support is poor and that the expectations as promised by the software vendor is not in line. It is recommended that the project manager should have focus group interview with end users in order to find out what type of support is preferred from the vendors. Thereafter the service level agreement should be revisit and reworked according to the missing level of support and expectation as indicated by the staff.

5.4 Areas for Further Research

There is limited research that has been conducted on companies that utilise ERP systems. It is therefore recommended that more studies should be conducted in this area. It is also recommended that interviews be carried out with the target population to determine if the implementation of hybrid ERP has enabled the efficiency of the company.

5.5 Summary

An overview of the entire study was presented in this chapter. Despite the limitations of this study, the research objective has been met and the study has made certain important points for the SABMILLER (Prospecton brewery) to consider on the adoption and implementation of major systems projects like ERP. Agility in keeping up the pace with dynamically ever changing technological developments and environment is paramount for every organisation. It was established that it is imperative for organisations to ensure that employees are considered as an integral part of their strategy in the ERP implementation. Poor project management skills during the implementation of this project were identified as one of the challenges encountered. The recommendations presented are practical and can be easily implemented. This chapter concludes this study.

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Annexure A: Covering Letter to Respondents

UNIVERSITY OF KWAZULU-NATAL: GRADUATE SCHOOL OF BUSINESS & LEADERSHIP

MBA Research Dissertation

Efficacy of hybrid ERP at SABMILLER, Prospecton Brewery: The end-user's perspectives

The purpose of this survey is to solicit information from the SABMILLER Prospecton Brewery SAP system end users regarding their company's selected and embedded ERP modules. This selection process of modules from different ERP software vendors makes the brewery's system to be a hybrid. The information and ratings you provide for this study will assist in identifying as to how realistic the assumption or notion that implementing the entire ERP system software packages are either applicable or not.

The questionnaire should only take approximately 15 - 20 minutes to complete. The study is voluntary and you may withdraw should you feel a need to.

Thank you for participating.

Researcher: Msawenkosi Mngqobi Daniel, Msomi (031 915 0061 / 074 517 8086)

Supervisor: Prof Manoj Maharaj (031 – 260 8003 / 083 786 6034)

Research Office: Ms. P Ximba 031-2603587

Annexure B: Questionnaire

Title: Efficacy of hybrid ERP at SABMILLER, Prospecton brewery: The end-users' perspectives

Section A: Demographic Information

Please mark only ONE option per question with an 'X'

1. Gender

| | |
|--------|--|
| Male | |
| Female | |

2. Race

| | |
|-----------------------|--|
| African | |
| Indian | |
| Coloured | |
| White | |
| Other: please specify | |

3. What is your age group?

| | |
|--------------------------------------|--|
| 21-29 years | |
| 30-39 years | |
| 40-49 years | |
| Over 50 years | |
| I don't want to answer this question | |

Section B: To Determine the Involvement of Key Stakeholders during the Implementation of the Hybrid ERP System at SABMILLER (Prospecton Brewery).

4. Please rate their contribution in terms of importance to the decision making process of ERP software purchasing. Please select by placing an 'X' only one option per department which best suit your opinion.

| | Was not involved in ERP selection | Not at all important | Moderately important | Important | Highly Important |
|--|---|-------------------------|-------------------------|-----------|---------------------|
| Executives | | | | | |
| Administrative department | | | | | |
| Engineering department | | | | | |
| Finance / Accountancy department(s) | | | | | |
| Human Resources department | | | | | |
| IT / Systems department | | | | | |
| Legal department | | | | | |
| Supply chain department | | | | | |
| Marketing department | | | | | |
| Research & Development department | | | | | |
| Distribution and Warehousing department | | | | | |
| External consultants | | | | | |

Section C: To Determine the Benefits of using Hybrid ERP Systems at SABMILLER (Prospecton Brewery)

Rank what you believe are the benefits of using hybrid ERP module in your production processes. (Please select by placing an 'X' only one option per problem, which best represents your opinion).

| | Highly Important | Important | Neutral | Somewhat unimportant | Not at all important |
|---|------------------|-----------|---------|----------------------|----------------------|
| 6. Increased integration | | | | | |
| 7. Reduce number of software tools required to support the manufacturing system | | | | | |
| 8. Accessibility and quality of product support | | | | | |
| 9. Increases adaptability and flexibility of software | | | | | |
| 10. Compatibility with existing hardware | | | | | |
| 11. Compatibility with existing operation software | | | | | |
| 12. Consistency with interface and user-friendly operations | | | | | |
| 13. Easily understood and well-designed business decision-making support information system | | | | | |
| 14. Hybrid ERP reduces dependency on a number of key employees | | | | | |

| | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|--|-------------------|----------|---------|-------|----------------|
| 15. Inventory planning has improved significantly through hybrid ERP | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| 16. Raw materials planning became optimum as a result of hybrid ERP installation | | | | | |
| 17. ERP has improved the company's efficiency | | | | | |
| 18. Hybrid ERP makes manufacturing systems to have optimum back-up | | | | | |
| 19. Overall satisfaction with the software | | | | | |
| 20. Interdepartmental systems integration have improved significantly | | | | | |

Section D: Research Objective: To Determine the Challenges that SABMILLER (Prospecton Brewery) Encountered during the Utilization of the Hybrid ERP System

| | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|--|-------------------|----------|---------|-------|----------------|
| 21. Time taken to gain confidence in the ERP system | | | | | |
| 22. It took a long time to import data into the ERP system | | | | | |
| 23. Some modules bought were never used in this company | | | | | |
| 24. The software interface is not intuitive and very difficult for non-computer literate people to use | | | | | |
| 25. Poor level of vendor support | | | | | |
| 26. The system does not function to the expectations as promised by the software vendor | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| 27. ERP's training programme was long, complex and not very cost effective | | | | | |
| 28. The level of ERP training increased the performance of the users | | | | | |
| 29. There was a great resistance from employees to the new software | | | | | |
| 30. Lack of effective project management in the implementation of ERP software | | | | | |
| 31. Business process re-engineering is practically feasible in a cost effective way | | | | | |
| 32. Efficacy of hybrid ERP is dependent on key personnel from the IT/Manufacturing systems | | | | | |

Thank you for participating

Annexure C: Letter of acceptance to conduct study at SABMiller,



Memorandum from the Manufacturing Systems Manager

Prospecton Brewery
9-25 Jeffels Road, Prospecton, 4110
Tel (031) 910 1269 Fax 086 688 9685
PO Box 833, Durban, 4000, South Africa
Email: naven.chettiar@za.sabmiller.com

DATE : 8 November 2013
TO : Whom it may concern
FROM : Naven Chettiar

MBA Research Project – Efficacy of hybrid ERP at SABMiller, Prospecton Brewery: The end-user's perspectives

This letter serves to confirm that SABMiller – Prospecton Brewery is granting approval to Mr. Msawenkosi MD Msomi to conduct research for the above MBA research project.

Should you have any queries regarding the above, please contact Naven Chettiar on 082 377 1847 or via email naven.chettiar@za.sabmiller.com.

Kind regards,

Naven Chettiar
Manufacturing Systems Manager: Prospecton Brewery

Directors

N J Adami (Chairman/Managing Director), Y Maharaj, I H F Boesenberg, IV Everitt-Penhale (British), M P Fandeso#, J Ustas, J M Kahn*, K D Moroka#, W J McCauley, M M Ngoasheng#, C D Raphiri, G D Saunders **Company Secretary** M C B Sexby

* Non Executive
Reg. No. 1998/006375/06

Independent Non Executive



Sakha Sonke
building together



A subsidiary of SABMiller plc

Annexure D: Recognition of Breach of Ethical Clearance



Protocol reference number : HSS/1421/013M
Project title : Efficacy of a hybrid ERP implementation at SABMiller, Prospecton brewery:
The end-users's perspectives

ACKNOWLEDGEMENT: BREACH OF ETHICAL PROCESSES AT UKZN

I, the undersigned,

Student Name (Student Nr) : Mr Mawenkosi Mqobeli Daniel Msomi (201308939)
School : Graduate School of Business & Leadership
Campus : Westville

as the Principal Investigator ("the Applicant") in the above stated project, do hereby acknowledge that:

1. The University of KwaZulu-Natal's (hereinafter "UKZN") Research Ethics Policy (V) does not make provision for Retrospective Ethics Approval;
2. All researchers (both students and staff) at UKZN are obliged to be familiar with this policy;
3. I have been informed that research cannot be done without obtaining full ethical clearance as per the policy and guidelines of the University;
4. Research for the above project was undertaken by myself without final ethical clearance being obtained;
5. The University reserves its right to, at any stage and time, withdraw the relevant degree obtained by myself if:
5.1 If becomes known to UKZN that there was an additional ethical breach during any field work or whilst collection data for the above stated project, and / or
5.2 I fail to apply for ethical clearance for any future research projects.
6. In addition to point 5 above, the appropriate disciplinary processes will follow should this occur again.

I further acknowledge that should there be any legal implications/actions emanating from the research in terms of any ethical violations, I will be personally liable and hereby indemnify UKZN against any legal action that may arise from my failure to adhere to the University Research Ethics Policy (V).

Signed at Umbumbane on the 10th day of MARCH 2016

Signature of applicant: _____

Signed at _____ on the _____ day of _____ 2016

Signature of Chair (HSSREC): _____

Date: 15/4/16

Humanities & Social Sciences Research Ethics Committee

Dr Shemika Singh (Chair)

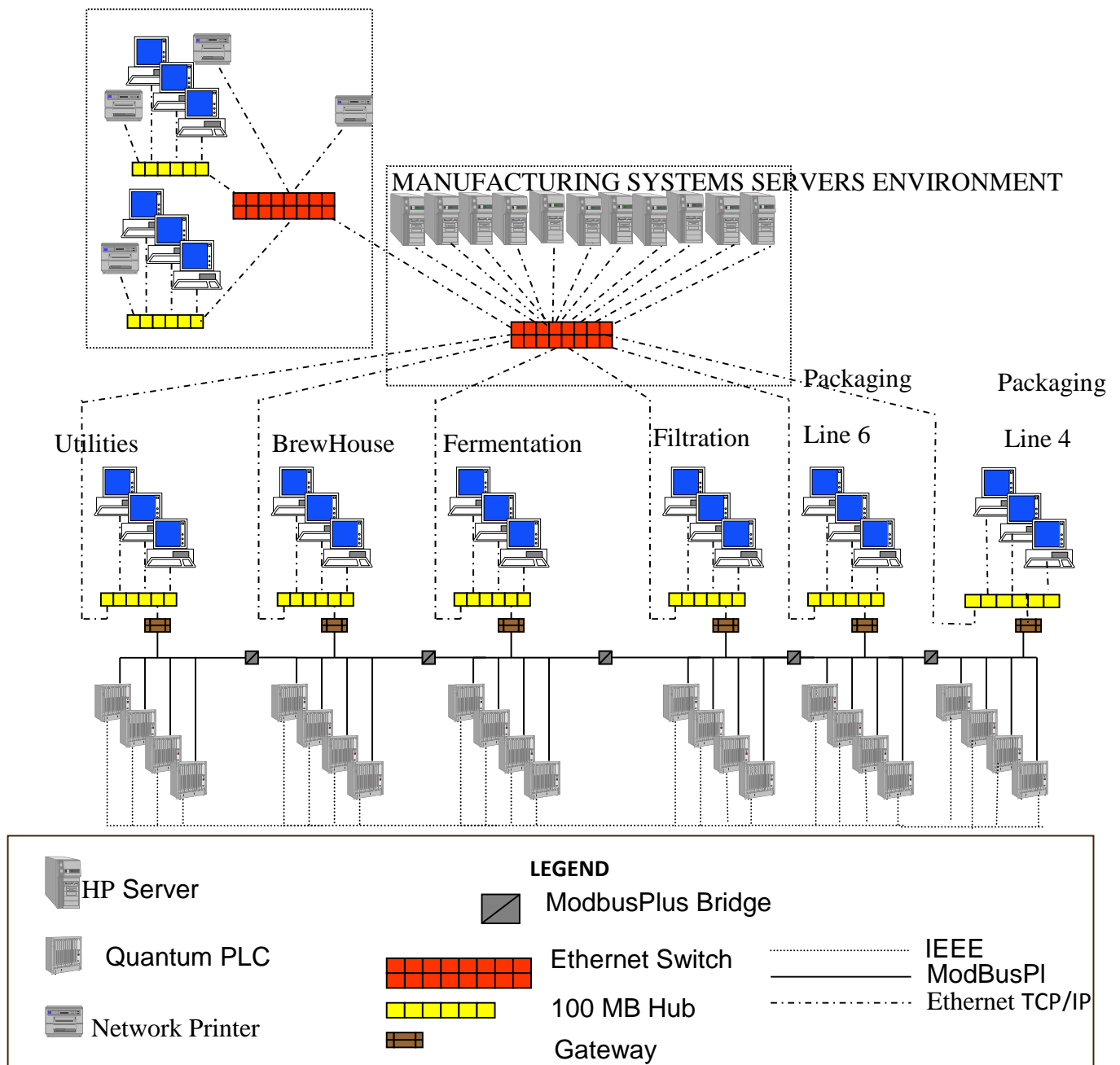
Westville Campus, Gorman Athlet Building

Postal Address: Private Bag X54000, Durban 4000

Telephone: +27 (0) 31 260 3587/3590/4557 Facsimile: +27 (0) 31 260 4609 Email: hssrec@ukzn.ac.za

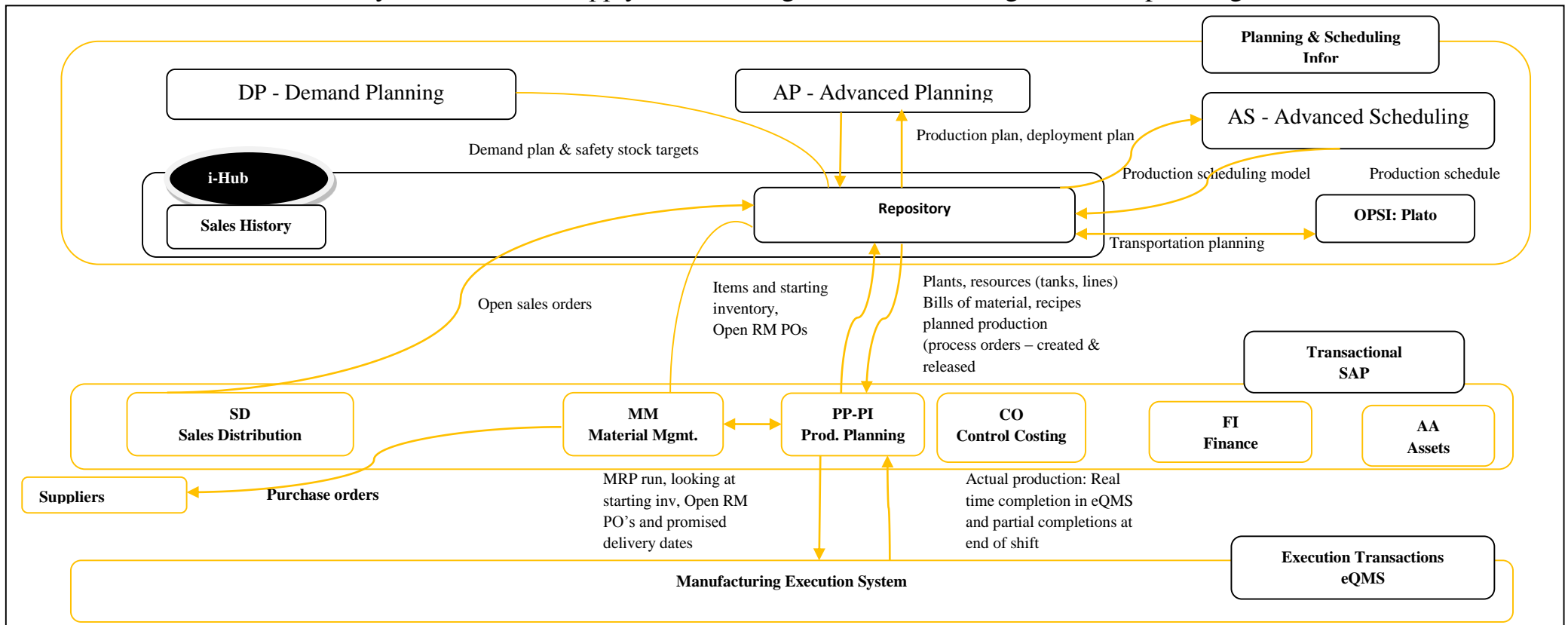
Website: www.ukzn.ac.za

ANNEXURE E: SABMILLER PROSPECTON BREWERY MANUFACTURING SYSTEMS LAYOUT



Source: SABMILLER (2009)

ANNEXURE F: Brewery's ERP Infor's Supply Chain management and Planning – Tactical planning embedded modules



Source: Van Schoor (2011)

Annexure G: Benchmarking SABMILLER with other breweries globally

| Company name | Foreign benchmark | Domestic benchmark |
|----------------------------|------------------------------|---|
| Bershad brewery | The Boston Beer Company, Inc | - |
| Sarmat brewery company | SABMiller | - |
| Chernigiv "Desna" brewery | Plzensky Prazdroj, a.s | - |
| | The Boston Beer Company, Inc | - |
| | SABMiller | - |
| Brewery "Rogan" | The Boston Beer Company, Inc | - |
| | SABMiller | - |
| Uman brewery | SABMiller | - |
| | Plzensky Prazdroj, a.s | - |
| Imperia-S | Plzensky Prazdroj, a.s | Sarmat Brewery Company |
| Brewery on Podol | The Boston Beer Company, Inc | Bershad brewery Brewery "Rogan" |
| Riven' | The Boston Beer Company, Inc | Bershad brewery Brewery "Rogan" |
| Nikolaev "Yantar" brewery | SABMiller | Chernigiv Brewery "Desna" |
| | Plzensky Prazdroj, a.s | |
| Lviv brewery | SABMiller | Sarmat Brewery Company Chernigiv Brewery "Desna" |
| | Plzensky Prazdroj, a.s | |
| Oppillya | The Boston Beer Company, Inc | Uman brewery Brewery "Rogan" |
| | SABMiller | |
| BNC Slavutich | SABMiller | Sarmat Brewery Company Chernigiv Brewery "Desna" |
| | Plzensky Prazdroj, a.s | |
| Khmelpivo | SABMiller | Sarmat Brewery Company Uman brewery Chernigiv Brewery "Desna" |
| | Plzensky Prazdroj, a.s | |
| SUN InBev Ukraine | SABMiller | Chernigiv Brewery "Desna" |
| | Plzensky Prazdroj, a.s | |
| Novograd-Volynskiy brewery | The Boston Beer Company, Inc | Uman brewery Brewery "Rogan" |
| | SABMiller | |
| Company 'Obolon" | The Boston Beer Company, Inc | Sarmat Brewery Company Uman brewery |
| | SABMiller | |

| | | |
|------------------------------------|---|---|
| Rovenki brewery | The Boston Beer Company, Inc SABMiller | Chernigiv Brewery "Desna" Uman brewery Brewery "Rogan" |
| Ohtyrka brewery | The Boston Beer Company, Inc SABMiller | Uman brewery Brewery "Rogan" |
| Radekhiv brewery | Plzensky Prazdroj, a.s | Sarmat Brewery Company Uman brewery |
| Eurasia Beer Group | Grupa Zywiec S A Plzensky Prazdroj, a.s | Sarmat Brewery Company |
| Brovar | SABMiller Plzensky Prazdroj, a.s | Sarmat Brewery Company Uman brewery |
| BNC Radomyshl | The Boston Beer Company, Inc SABMiller Plzensky Prazdroj, a.s | Sarmat Brewery Company |
| Cherkaske Pyvo | The Boston Beer Company, Inc | Uman brewery Brewery "Rogan" |
| Lysychansk brewery | SABMiller Plzensky Prazdroj, a.s | Sarmat Brewery Company Uman brewery |
| Dnepropetrovsk brewery "Dnipro" | SABMiller Plzensky Prazdroj, a.s | Sarmat Brewery Company Uman brewery Chernigiv Brewery "Desna" |
| Pavlivskiy brewery | The Boston Beer Company, Inc | Bershad brewery Brewery "Rogan" |
| Zahidpyvo | The Boston Beer Company, Inc SABMiller | Uman brewery Brewery "Rogan" |
| Sevastopol brewery | The Boston Beer Company, Inc SABMiller | Uman brewery Brewery "Rogan" Chernigiv Brewery "Desna" |
| Lugansk brewery | The Boston Beer Company, Inc SABMiller Plzensky Prazdroj, a.s | Sarmat Brewery Company |
| Brewey "Crimea" | The Boston Beer Company, Inc SABMiller Plzensky Prazdroj, a.s | Sarmat Brewery Company Uman brewery Chernigiv Brewery "Desna" |
| Izyum brewery | The Boston Beer Company, Inc | Uman brewery |

| | | |
|---|---|---|
| "Poltavpiro" firm | Plzensky Prazdroj, a.s The Boston Beer Company, Inc | Brewery "Rogan" Sarmat Brewery Company |
| Chernyatsinske pyvo | Plzensky Prazdroj, a.s The Boston Beer Company, Inc | Sarmat Brewery Company Uman brewery |
| Melitopol brewery | The Boston Beer Company, Inc SABMiller | Uman brewery Brewery "Rogan" |
| Average potential growth of efficient benchmarking Implementation | 45, 6 % | 32.4 % |

Annexure H: Statistics Total Item

| Item-Total Statistics | | | | |
|-----------------------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
| Q6.1 | 81.7308 | 65.725 | .018 | .760 |
| Q6.2 | 81.5000 | 70.900 | -.257 | .777 |
| Q6.3 | 79.4231 | 65.214 | .070 | .753 |
| Q8.1 | 79.4231 | 63.854 | .273 | .738 |
| Q8.2 | 79.6538 | 63.275 | .350 | .734 |
| Q8.3 | 79.8077 | 62.162 | .388 | .731 |
| Q8.4 | 79.8846 | 60.026 | .527 | .721 |
| Q8.5 | 79.9231 | 61.274 | .339 | .733 |
| Q8.6 | 80.1154 | 51.866 | .845 | .685 |
| Q8.7 | 80.0000 | 56.400 | .765 | .703 |
| Q8.8 | 80.1923 | 57.042 | .592 | .712 |
| Q8.9 | 79.8077 | 55.202 | .762 | .699 |
| Q8.10 | 80.1154 | 57.066 | .553 | .714 |
| Q8.11 | 80.0000 | 54.080 | .728 | .698 |
| Q8.12 | 79.7308 | 69.405 | -.243 | .759 |
| Q8.13 | 79.3846 | 69.606 | -.259 | .760 |
| Q9 | 81.9231 | 63.514 | .471 | .732 |
| Q10 | 81.9231 | 67.434 | .000 | .746 |
| Q11 | 80.6923 | 58.062 | .373 | .730 |
| Q12 | 81.7692 | 68.985 | -.172 | .761 |
| Q13 | 81.8462 | 66.135 | .051 | .750 |
| Q14 | 82.0769 | 65.754 | .259 | .741 |
| Q15 | 81.7308 | 67.485 | -.047 | .754 |
| Q16 | 82.0000 | 64.320 | .312 | .737 |
| Q17 | 81.5385 | 65.378 | .096 | .748 |
| Q18 | 81.8846 | 67.386 | -.021 | .749 |

Annexure I: Chi-squared (χ^2) test statistics

| | | Gender | Race | Age | Department |
|--|--------------|--------|--------|--------|------------|
| Q6.1 Its operations should be centrally controlled. | Chi - Square | 15.347 | 17.395 | 11.222 | 21.566 |
| | df | 4 | 12 | 12 | 16 |
| | Sig. | 0.004 | 0.135 | 0.510 | 0.158 |
| Q6.2 It should be zonal (hub) controlled. | Chi - Square | 1.799 | 11.159 | 9.618 | 19.022 |
| | df | 3 | 9 | 9 | 12 |
| | Sig. | 0.615 | 0.265 | 0.382 | 0.88 |
| Q6.3 It should be regionally controlled. | Chi - Square | 2.051 | 9.145 | 7.693 | 13.446 |
| | df | 3 | 9 | 9 | 12 |
| | Sig. | 0.562 | 0.424 | 0.565 | 0.337 |
| Q8.1 A lot of bugs in the software. | Chi - Square | 0.330 | 9.283 | 3.016 | 10.164 |
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.848 | 0.158 | 0.807 | 0.254 |
| Q8.2 It took a lot of time to gain confidence for the system to go live. | Chi - Square | 4.425 | 11.603 | 5.859 | 19.570 |
| | df | 3 | 9 | 9 | 12 |
| | Sig. | 0.219 | 0.237 | 0.754 | 0.076 |
| Q8.3 It took a long time to import data into the ERP system. | Chi - Square | 3.164 | 7.431 | 1.165 | 5.887 |
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.206 | 0.283 | 0.979 | 0.660 |
| Q8.4 Some modules bought were utilized within the company. | Chi - Square | 1.555 | 4.350 | 13.464 | 9.251 |
| | df | 3 | 9 | 9 | 12 |
| | Sig. | 0.670 | 0.887 | 0.143 | 0.681 |
| Q8.5 The software interface is not intuitive and very difficult for non-computer literate people to use. | Chi - Square | 2.059 | 10.497 | 11.502 | 9.770 |
| | df | 4 | 12 | 12 | 16 |
| | Sig. | 0.725 | 0.572 | 0.486 | 0.878 |
| Q8.6 The software provider (vendor) is not responsive to problems we encountered. Poor level of support. | Chi - Square | 1.380 | 14.264 | 13.520 | 17.186 |
| | df | 4 | 12 | 12 | 16 |
| | Sig. | 0.848 | 0.284 | 0.332 | 0.374 |
| Q8.7 The system does not function to the expectations as promised by the software engineer. | Chi - Square | 6.085 | 10.684 | 8.245 | 19.209 |
| | df | 3 | 9 | 9 | 12 |
| | Sig. | 0.108 | 0.298 | 0.510 | 0.084 |
| Q8.8 The system is difficult to maintain or upgrade. | Chi - Square | 3.619 | 17.607 | 12.491 | 22.903 |
| | df | 4 | 12 | 12 | 16 |
| | Sig. | 0.460 | 0.128 | 0.407 | 0.116 |

| | | | | | |
|---|---------------------|---------------|---------------|---------------|-------------------|
| | | | | | |
| | | | | | |
| | | Gender | Race | Age | Department |
| Q8.9 Its training program was long, complex and was not very cost effective | Chi - Square | 2.605 | 6.716 | 14.372 | 18.531 |
| | df | 3 | 9 | 9 | 12 |
| | Sig. | 0.457 | 0.667 | 0.110 | 0.100 |
| Q8.10 There was great resistance from employees to the new software. | Chi - Square | 3.197 | 15.952 | 10.599 | 18.919 |
| | df | 4 | 12 | 12 | 16 |
| | Sig. | 0.525 | 0.193 | 0.564 | 0.273 |
| Q8.11 We did not have effective project management when implementing this software. | Chi - Square | 8.957 | 12.739 | 14.087 | 33.222 |
| | df | 4 | 12 | 12 | 16 |
| | Sig. | 0.062 | 0.388 | 0.295 | 0.007 |
| Q8.12 Overall we are satisfied with software. | Chi - Square | 4.623 | 5.902 | 3.864 | 5.014 |
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.099 | 0.434 | 0.695 | 0.756 |
| Q8.13 Overall, the software has improved our company's efficiency. | Chi - Square | 0.433 | 4.087 | 6.957 | 5.639 |
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.805 | 0.666 | 0.325 | 0.688 |
| Q9 Hybrid ERP makes manufacturing systems back-up optimum. | Chi - Square | 1.155 | 10.333 | 13.042 | 7.952 |
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.561 | 0.111 | 0.042 | 0.438 |
| Q10 The level of ERP training given by the company to me has increased my performance at work. | Chi - Square | a | A | a | a |
| | df | | | | |
| | Sig. | | | | |
| Q11 I would like to become a professional in ERP system. | Chi - Square | 3.232 | 9.464 | 19.085 | 29.844 |
| | df | 4 | 12 | 12 | 16 |
| | Sig. | 0.520 | 0.663 | 0.086 | 0.019 |
| Q12 It has enabled manufacturing system trends (dynamic and static) by end-users throughout the plant. | Chi - Square | 1.714 | 7.042 | 2.926 | 23.100 |
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.424 | 0.317 | 0.818 | 0.003 |
| Q13 SABMiller's hybrid ERP system efficacy depends on the number of key employees (i.e. IT/Systems department). | Chi - Square | 3.793 | 7.292 | 5.183 | 20.916 |
| | df | 3 | 9 | 9 | 12 |
| | Sig. | 0.285 | 0.607 | 0.818 | 0.052 |
| Q14 Interdepartmental systems integration processes have improved significantly. | Chi - Square | 2.088 | 5.156 | 12.229 | 21.373 |

| | | | | | |
|---|---------------------|---------------|--------------|---------------|-------------------|
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.352 | 0.524 | 0.057 | 0.006 |
| Q15 Business process re-engineering (BOP) is practically feasible in a cost effective way. | Chi - Square | 1.568 | 9.413 | 12.249 | 15.790 |
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.457 | 0.152 | 0.057 | 0.045 |
| | | | | | |
| | | Gender | Race | Age | Department |
| Q16 Hybrid ERP modules have helped the planning inventory of the company be precise. | Chi - Square | 0.760 | 3.727 | 6.224 | 12.998 |
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.684 | 0.714 | 0.399 | 0.112 |
| Q17 Manufacturing requirements planning (MRP) is still relevant in an industrial world (obsessed with supply-chain management and enterprise resource planning (ERP). | Chi - Square | 3.360 | 6.511 | 9.899 | 10.602 |
| | df | 3 | 9 | 9 | 12 |
| | Sig. | 0.339 | 0.688 | 0.359 | 0.563 |
| Q18 Raw materials planning of the company has become optimum after the crisis building towards South Africa FIFA World Cup 2010. | Chi - Square | 3.580 | 4.599 | 10.744 | 4.956 |
| | df | 2 | 6 | 6 | 8 |
| | Sig. | 0.167 | 0.569 | 0.097 | 0.762 |

Annexure J: Turn-It-In Report

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CHAPTER ONE INTRODUCTION 1.1 Introduction Technology evolution impacts on all business manufacturing processes and is important in increasing a company's ability to either produce or render better services. In addition a company needs to offer a product or service in the right place, at the right time and at a lower cost in order to

remain competitive. The **8 Enterprise Resource Planning (ERP) initiative is for**

many companies a large Information Technology (IT) investment that

radically reshapes **the entire IT landscape.** /**Companies are turning to ERP

solutions as a need that responds to the demand of the customer namely speed,

flexibility, comparability and accuracy. **5 /**This chapter */presents a**

background to the study, the aim, the research objectives and questions

and the /**significance **of the study.* /** 1.2 Problem Statement SAMBILLER

adopted ERP Systems Applications Products (SAP) in the year 2000 in all its breweries. The demand for SAMBILLER's product grew (in the year 2000) from the production capacity of 120 000 hectolitres per week to (220 000) hectolitres per week (in the year 2010) (SAMBILLER, 2010). According to van Schoor (Automation Manager of SAMBILLER), even though the company already had the ERP SAP solution in place, it could only meet 54% of its inventory plans in the year 2010 (Van Schoor, 2011). Complaints from customers increased due to the demand of the product not being met (Van Schoor, 2011). In order to address the challenge of complaining customers, the implementation of appropriate IT platforms and tools were essential. Infor's Advanced Planning and Scheduling (APS) which is another ERP vendor was then ultimately selected to address the planning issues of the supply chain. Three /**modules namely demand planning, advance scheduling Page 1 of 68 (detailed scheduling) * and advanced planning (tactical manufacturing and inventory planning) were embedded into * SAP (dominant ERP software modules at SAMBILLER) in order to optimise the brewery's * existing manufacturing systems (Van Schoor, 2011). Hence the joining of SAP and Infor's **/APS brought about the hybrid ERP system at SAMBILLER. The embedding of the three modules onto the ERP system was to ensure speed, flexibility and interoperability to the already existent system. The company's 'self-contained' islands systems have been operating as per Annexure A. However, with the adoption of Infor's APS ERP modules the company wanted its manufacturing system to function more effectively and efficiently ideally as per Annexure B. This study therefore seeks to investigate the end-users' perspectives of the efficacy of hybrid ERP system at SAMBILLER (Prospecton Brewery). 1.3 Background to the Study SAMBILLER is one of the world's giant beer breweries with many subsidiaries across all six continents of the globe (SAMBILLER, 2014). There are seven breweries in South Africa. The focus of this study was on SAMBILLER's Prospecton Durban branch brewery which **10 supplies**

eight brands of beer for the coastal region of South African breweries. In the

year 1984 the SABMILLER (Prospecton Brewery) was automated with Programmable Logic Controllers (PLCs) (SABMILLER, 2009). This system installation was configured in such a way that it divided the plant **10** into five operating and control areas

namely Brew House, Utilities, Fermentation, Filtration as well as Packaging

departments (SABMILLER, 2009). Each area was treated as a 'self-contained'

island to do automation with communication between the islands via PLCs

and the supervisory networks (SABMILLER, 2014). A supervisory system called

Supervisory Control and Data Acquisition (SCADA) **10** was specified and bought

with more than just plant control in mind. The cost (even though it was

expensive) was justified in that the SCADA system would **10** be able to

handle future manufacturing execution systems (MES) (SABMILLER, 2014).

However, the MES was developed as an independent system and not an

enhancement or add-on to the existing supervisory system. This was due

to the fact that programming standards changed from procedural to event

driven processes (SABMILLER, 2014). Therefore, there was still a need Page 2 of 68 for an efficient system to be adopted as a solution to manufacturing operations that operated as self-contained islands (silos). Hence, the company turned to the addition

of Infor's APS ERP in order to integrate the various **2** departments and its

business functions of the entire company into a single shared system

(Cooke, Guha and Filsoof, 2013). Baltzan and Phillips (2010) point out that the implementation of ERP enables decision makers to make informed decisions from the accurate, comparable and reliable information available and accessible at their disposal. According to Webster (2008), systems that are used to plan, control the daily running of business transactions and provide a real time access to information throughout the organisation in a consistent manner are called ERP. 1.4 The aim of the Study The aim of the study is to investigate the end-users' perspectives of the efficacy of hybrid ERP at SABMILLER Prospecton Brewery and to make recommendations on best practices in the utilisation of ERP systems. 1.5 Research Objectives The research objectives are as follows: ? To determine the involvement of key stakeholders during the implementation of hybrid ERP system at SABMILLER (Prospecton Brewery); ? To determine the benefits of using hybrid ERP in the production processes at SABMILLER (Prospecton Brewery); ? To determine the challenges that was encountered in the implementation of the hybrid ERP system at SABMILLER (Prospecton Brewery); and ? To make recommendations to the various stakeholders on the best practices in the utilisation of hybrid ERP systems. Page 3 of 68 1.6 Research Questions The following research questions were formulated from the research objectives of this study: ? Were key stakeholders involved during the implementation of hybrid ERP system at SABMILLER (Prospecton Brewery)? ? What are the benefits of using hybrid ERP in the production processes at SABMILLER (Prospecton Brewery)? ? What are the challenges

that was encountered in the implementation of the hybrid ERP system at SABMILLER (Prospecton Brewery)? and ? What recommendations can be offered to the various stakeholders on the best practices in the utilisation of hybrid ERP systems? 1.7

Significance of the Study The findings of this study will allow SABMILLER to reflect on whether the implementation of the hybrid ERP systems was worth their investment. In addition, CSFs have been highlighted which should assist the company to identify their current gaps in their operational levels of ERP. Recommendations that are provided in

this study will enable the management to ensure the efficacy of ERP. The **5 study**

will also add to the body of academic knowledge. 1.8 Format of the Study

The study was **formatted** according to the following chapters: ? Chapter One:

Introduction and Overview of the Study Page 4 of 68 This chapter gives the background of the study, presents the problem statement and aims of the study. The research objectives, research questions and significance of the study is also discussed in this chapter. ? Chapter Two: Literature Review Chapter two discusses the literature reviewed for this study. A background to understanding ERP is given. In addition, the benefits and challenges together with the critical success factors (CSFs) are also discussed in this chapter. ? Chapter Three: Research Methodology The research methodology adopted to conduct this study has been explained in this chapter. ? Chapter Four: Analysis of Data and Interpretation of Findings Data received from the respondents was analysed and presented in this chapter. The findings are discussed and aligned to secondary data. ? Chapter Five: Conclusion of the study This chapters

brings the study to a conclusion. In this chapter the **1 findings from both the**

primary **and** secondary **data are summarised** according to **the research**

objectives and research questions. The recommendations and area for further

study are presented in this chapter. 1.9 Conclusion The effective use of ERP systems within a company is essentially to stay competitive and profitable. ERP systems integrates the entire company according to their needs. In addition the ERP system enables for decisions to be made quickly as opposed to traditional methods. It is essential for a company to continually measure the post implementation results as most major IT transformation could create either a gain or a loss in the business. The next chapter presents the literature gathered for this study. Page 5 of 68

1 CHAPTER TWO LITERATURE REVIEW 2.1 Introduction Many companies

throughout **the 6 world have adopted ERP implementation** as it **has**

become a key business driver. The ERP system has drawn attention mainly

because of the variety of benefits it provides. /*The ERP software is usually installed into the company's computer * systems and comprises of **2 a number of fully**

integrated business modules, which cover almost *every feature of the

company's business activities and processes*/. This chapter presents **the**

literature reviewed for this study. The chapter starts with a background to the EPR system and presents an understanding of ERP is presented. The benefits, challenges and critical success factors (CSF) to implementing the ERP system are also discussed.

2.2 The Background of Enterprise Resource Planning System There has been a substantial evolution of ERP systems in the past few decades (Baltzan and Phillips,

2010). Its technicalities and designs have improved significantly to ensure suitability not only for a company's internal use, but to such an extent that it extends its ability beyond enterprise boundaries (Baltzan and Phillips, 2010). Baltzan and Phillips (2010) add that the birth of the internet-enabled ERP systems enabled companies to achieve the extension of their business applications to external suppliers and to customers. This concept is technically internet-enabled (for example data warehousing) with the emphasis of this work on the hybrid ERP system. Masini and Wessenhove (2009) argued that /** ERP systems can act as the *backbone link to enterprise applications

such as **7 supply chain management (SCM)** as well as ***Customer**

Relationship Management (CRM) systems*/. The ERP system started /**in the 1960s when the primary source of competitiveness was cost. * In the 1960s the focus of companies was on high-volume production, cost Page 6 of 68 minimization, and *

managing large inventories efficiently (Basolgu, Daim and Kerimoglu, **12 2007)*/.**

/An information system was designed to forecast inventory needs for**

companies. The *shortcoming of this initial system is that it did not factor

in customer demand for products. *However, the introduction of a

computerised **reorder point system (ROP) was enough to *satisfy basic**

manufacturing planning and control*/. Tsamantanis and Kogetsidis (2006)

mention that ERP arose from the need for companies to control the actual as well as the assumed inventory levels. It was paramount to try and satisfy customers' needs and demands in order for organisations to stay competitive. Several software packages were designed and developed which were aimed at helping companies to control their inventories with more success and possible efficiency (Hasan, Trinh, Chan, Chan and Chung, 2011). One of the characteristics about technology is the fact that it evolves such that the software package developed was based on what was the concept for traditional inventory at the time and became obsolete as time progressed (Ngai, Law and Wat, 2008). In the following decade (1970s) inventory control needs increased. In order for companies to maintain competitiveness, a need to minimise their total production costs by keeping their inventory levels as low as possible ensued. Materials resource planning (MRP) system came into being as a result thereof (Umble, Haft and Umble, 2003). /**This software package proved * useful in many cases and they failed in as many cases as well. It was identified that one of *the reasons for its failure was due to the fact that schedule inventory purchasing operations *were closely related to both financial and human resources (Tsamantatis and Kogetsidis, *2006). However, it was however, a giant leap in the materials planning process (Umble, Haft *and Umble, 2003). The use of a master production schedule (supported by the bill of materials *files) which identified the specific materials needed to produce each finalised item. Computer *machines could only be used to calculate gross materials requirements (Umble, Haft and *Umble, 2003). Page 7 of 68 Functions such as sales and production operations came into existence in the manufacturing industry soon after the advent of MRP (Yu, 2007). This included production planning, master production, scheduling, capacity requirements planning as well as factory floor and supply scheduling techniques were incorporated (Hasan et al., 2011). This system began to be recognised by managers as the most useful and powerful tool company-wide (Masini and Wessenhove, 2009). Technology by nature is associated with versatile and dynamic changes. It was these traits that resulted in the developmental stage known as closed-loop MRP (Tsamantantis and Kogetsidis, 2006). Each decade had its own developments and advancements and the 1980s saw the inclusion of other productive systems portions such as the MRP system expansion. The purchasing function was one of the

first modules to be included (Yu, 2007). The shop floor, dispatch and the detailed scheduling control were included into the production system. As a result thereof it was no longer adequate to describe the expanded system as the MRP had already included work centre capacity limitations. These powerful developments at that time enabled the available technology coupled with the financial activities, MRP II (MRP II) to be incorporated in the financial accounting system as well as the financial management system along with the manufacturing and materials management systems (Umble, Haft and Umble, 2003). It was firmly believed that this was the best desired business integrated system that derived the materials and capacity requirements associated with a desired operational plan, allowed input regarding detailed activities and translated all this to financial statements (Umble, Haft and Umble, 2003). The question arose as to whether all these developed systems really integrated the organisation's business processes or it could only interface them. By the 1990s, technological developments and advancements enabled functions such as manufacture, financial accounting, financial management, SCM, human resource management (HRM), purchasing, marketing, product design and life cycle management could then be incorporated in the systems software (Tsamantatis and Kogetsidis, 2006). It was only at this stage of development that the term 'ERP' came into being coined to refer to the comprehensive systems and to distinguish between the MRP systems. Tsamantatis and Kogetsidis (2006) add that it was this evolution which eventually led to the ERP concept which integrated all functional areas and transactional processing activities in the business enterprise in its entirety. ERP still evolves and is still dynamically characterised by the rapid changes and continuous developments (Hasan et al. 2011). As part of this concepts Page 8 of 68 developmental processes throughout the years different business aspects were gradually becoming embedded onto the then MRP, MRP II and eventually ERP systems as they evolve (Tsamantatis and Kogetsidis, 2006). 2.3 Understanding Enterprise Resource Planning Having evolved from MRP, the ERP system

3 is an integrated information system that supports business processes

and functions by overseeing **the entire** organisation's **resources efficiently**

and effectively (Hwang, 2011). Barker and Frolick (2003) add their view in that

ERP entails the **3 planning and** overseeing **of the** organisation's **resources in**

the most efficient, productive, and profitable manner. According to Kumar

and Van Hillegersberg (2000:22), ERP can be defined as "configurable information systems packages that integrate information and business processes within and across functional boundaries within an organisation". Al- Mashari, Al-Mudimigh and Zairi

(2003) add that ERP is an all-inclusive **12 software solution that** strives to

integrate the complete range of business processes and functions, in order

to present a company-wide view of the business from a single IT

architecture. Gartner (2012) defined ERP as "the ability to deliver an integrated

suite of business applications. ERP tools share a common process and data model, covering broad and deep operational end-to-end processes, such as those found in finance, HR, distribution, manufacturing, service and the supply chain". According to Webster (2008), /* ERP systems are used to plan the action steps, control and * record the day to day transactions of running a business and provide a real time access to * information in a consistent manner throughout the organisation*/. Sledgianowski, Tafti and Kierstead (2008) also concur that ERP is an IT driven system which virtually

enables enterprises to streamline and integrate all its operations from order processing to vendor and CRM. In an ERP system the /** 2 same modules can be found in

a company's computers that are * connected to each other virtually.

Hence, it allows for all employees from different business * departments

within the company (namely normal employees to top management) to

Page 9 of 68 * 2 communicate in real time. Figure 2.1 indicates */ the most

common modules that can be * found in a typical ERP system. Each

employee can use his or her module according to the * department he or

she belongs to. For example, the logistics clerks will log in the ERP system

* and work in their specific 2 work activities. They can check the

inventory level, trace the goods * and exchange information with other

departments smoothly in real time*/. /**Figure 2 .1: Typical ERP system

modules *Source: Green Beacon Solutions (2013)*/ According to Addo-

Tenkorang and Helo (2011), the implementation of the ERP system allows for data and information to flow effectively and efficiently through the entire company. This in turn

allows for 2 /**all managers of the company to get access to same

information. Hwang * (2011) points out that a company is more competitive

when it has effective and efficient * business processes in place*/. 2.4 New Millennium Trends of Enterprise Resource Planning Page 10 of 68 Figure 2.1 further reflects the

driving forces behind 11 hybrid ERP namely: ? /** Demand for better end-user

experience; ? * 11 Greater data availability enabled through cloud

computing; and ? * Functional leaders gain greater influence over IT

investments*/. Figure 2.2: Driving forces behind hybrid ERP Source:

PriceWaterHouse and Coopers (2015) According to Cooke, Guha and Filsoof (2013), the three trends that drive hybrid ERP systems are: ? Firstly, the emergence of cloud

computing which made 11 the notion of a single enterprise- wide business

obsolete. It has provided a platform for business enterprises to link loosely coupled

business systems costing 11 fit-for-purpose, cloud enabled applications on

the Page 11 of 68 **11** perimeter, tethered to move narrowly focused

legacy ERP back office systems. It provides the **11** degree of data

mobility that has become a requirement for virtually every business; ?

Secondly, business enterprises massive ERP infrastructure investments which normally does not deliver the end-users experiences and mobility increasingly demanded by suppliers, customers as well as the employees; and ? Finally, functional leaders such as

chief procurement officers **11** have long demanded greater influence of the

technologies that run their operations optimally. Hybrid ERP is ideal to

provide that kind of flexibility. Seeds and Backman (2016) state that

technology is evolving and this evolution has resulted in the new ERP grade applications developments which ultimately made the old ERP obsolete. This allowed for business enterprises to migrate in order to become more flexible and in keeping up the pace with the market demand forces (Cooke, Guha and Filsoof, 2013). They further argue that integration of the old and new applications into becoming hybrid ERP systems could benefit organisations. This integration enables specific business functions such as supplier management, re-order period, lead time of inventory to operate with greater agility as opposed to what could be attained in old-style IT organisation (Cooke, Guha and Filsoof, 2013). Nah and Delgado (2006) also point out

that the hybrid ERP system **3** enables companies to integrate their business

processes and all information relevant to their organisation. ERP systems

from the start of the new millennium (year 2000) took a growth path of an extended ERP which comprises of scheduling, forecasting, capacity planning, E-Commerce, warehousing as well as logistical aspects of the system (Baltzan and Phillips, 2010). Previously this system witnessed the emergence on ERP II which enabled the system to integrate its HR management modules, CRM modules, management of projects modules, production management modules portal capacity as well as the integrated

financials (Yu, 2007). According to King and Flor (2008), **4** integration is

referred to as the degree to which a company attains unity in organisational

subsystems by harmonizing different departments, modules, software, and

legacy systems. Integration is about attaining a unity of effort in organisational

subsystems (King and Flor, 2008). **4** It is to include both a set of physical

factors and information flows that span the value chain. The organisation

possessing higher Page 12 of 68 levels of integration tends to have higher performance. However, companies must realise that the benefits of an ERP system are limited unless it is seamlessly integrated with other information systems. Figure 2.1 depicts the back office as one piece of the company's strategy to create a global business function to consolidate specialist activities. SABMILLER implemented its back office associates active and passive data governance solutions to address its customers, vendors, materials and financial data (Hoots and Wiley, 2015). Hoots and

Wiley (2015) illustrated the active as well as the passive back office points in relation to their company's processes in that master data records are provided as a globalised, single and harmonised data governance solution by the back office active data governance solution. Data validity aligned with data design rules and proper workflow for provisioning and approval before data is automatically posted to the SAP ERP is ensured by the back office active data governance solution (Hoots and Wiley, 2015). This solution further allows users to perform data maintenance activities such as creating, copying, updating, blocking and deleting a master record for financial, material, vendor as well as customers' data (Hoots and Wiley, 2015). Thereafter data is posted to SAP ERP once its quality has been checked by the back office passive data governance solution which ensures that data integrity is maintained in the production environment (Hoots and Wiley, 2015). This is the solution where service level agreement are monitored by users to identify violations or check data error reports (Hoots and Wiley, 2015). All three driving forces (as depicted in Figure 2.1) create a global business services function to consolidate back office and activities (Cooke, Guha and Filsoof, 2013). 2.5 Benefits of Hybrid ERP Companies look for the following benefits when implementing an ERP system (Beatty and Williams, 2006; Finney and Corbett, 2007): ? /* Integrate financial data; ? * Standardise manufacturing processes; ? * Standardize human resource (HR) information; ? * Have real-time information; ? * Generate information for decision making; Page 13 of 68 ? * Reduce costs; ? * Increase sales; ? * Fulfil taxation requirements; and ? * Respond to growing global

competition*/. In view of the above, /* **3 ERP systems can be comprehensive**

and useful in integrating many * kinds of information processing abilities

by placing data into a single database*/ (Beatty and Williams, 2006; Finney

and Corbett, 2007). Through the **3 implementation of an ERP system,**

companies **can reduce the overall costs, make accurate data available in**

real time, and exchange information with customers and suppliers

(Basolgu, Daim and Kerimoglu, 2007). Trott and Hoecht (2004) add that ERP systems can provide more accurate and timely information. In addition, through the integrating business functions, a company can reduce data collection time and avoid data duplication. The timely information assists managers to improve decision making as well as facilitates communication between users. Tsamantatis and Kogetsidis (2006), Cooke, Guha and Filsoof (2013) and Yu (2007) concur that the following are five major reasons that motivate companies to adopt a hybrid ERP system: ? ERP systems integrate financial information: A company's senior manager always tries to have a holistic understanding of their company's overall performance. This could result in them encountering different versions from different personnel within the company. However, the implementation of an ERP system provides a single unified version of the information required as everyone in the business enterprise uses the same system. ? Customer order information integrated through ERP systems: To have this kind of information in one software system as opposed to have different systems that do not communicate, brings convenience in keeping track of orders more easily. The ERP system enables the coordination of inventory, shipping and manufacturing amongst many different locations simultaneously. Hence the links with suppliers and customers can be significantly strengthened. ? Manufacturing processes are sped up and standardised through ERP systems: using a single integrated ERP system enables the automation of some of the manufacturing Page 14 of 68 processes which results in cost effectiveness, saves time, reduces head count as well as increases productivity. ? Inventory reduction through ERP system: inventory controlling plans require the proper reorder period. Other activities related to inventory reduction control measures flow smoother and at an improved fulfilment process inside the company. ? ERP system standardises HR information: The process flow related to HR activities which includes

the tracking of employee's time, other benefits and services for employees (for example leave management) are administered more conveniently and more effectively. When ERP systems are successfully implemented in a company, it provides them with competitive advantages (Finney and Corbett, 2007). Hence, this clarifies **3 why an**

ERP system is generally considered to be a critical element for improved

business performance. Trott and Hoecht (2004) highlight that because the

3 ERP system is a vehicle that integrates business processes across

functional boundaries, 3 barriers between business functions and

departments are reduced. An added benefit is that the ERP system enables all

users or employees to communicate easily as the ERP system allows for a number of modules to be fully integrated into the business. The system also enables the company to effectively manage their resources in areas such as HR, finance and materials (Markus et al., 2000, Basolgu, Daim and Kerimoglu, 2007). 2.6 Challenges of Enterprise Resource Planning The implementation of the ERP system affects the entire

company (namely **7 process, people, and culture**) hence **a number of**

challenges are encountered as discussed in this section. Stockdale and Standing

(2006) outlined that one of the major challenges for ERP evaluation and selection is the need to develop a generic and sufficient framework to be applicable and sufficiently detailed to provide effective guidance. It is paramount to understand what is required to conduct an ERP evaluation. Ehie and Madsen (2005) and Helo, Anussornnitisarn and Phusavat (2008) concur that the implementation of ERP systems generally have a delayed /**estimated schedule and overruns *an initial budget. In addition, ERP implementations have often failed to achieve the Page 15 of 68 *company's targets

and desired outcomes. However, many researchers have **7 reported that the**

***failure of ERP implementations was not** as a result of ERP software itself, but

instead by *extreme complexities of the massive changes that the ERP causes within the company (Scott and Vessey, 2000; Helo, Anussornnitisarn and Phusavat 2008; Maditinos, Chatzoudes and Tsairidis, 2012). Zornada and Velkavrh (2005) argue that the failures experienced by many companies was that they followed the principle of 'best practices' in most successful companies instead of forming their own model of 'best practices'. Helo, Anussornnitisarn and Phusavat (2008) add that the main challenge with /**ERP implementation are not technologically related issues (namely technological complexity, compatibility and standardization) but mostly challenges related to the human element which include resistance to change and organisational culture. In addition, incompatible business processes, project mismanagement*/ and the lack of top management commitment adds to the challenges that are encountered in the implementation of the ERP system. Huang, Chang, Li and Lin (2004) point out that there are 10 major challenges that causes ERP implementation failure as listed in Table 2.1. /**-----

----- *Priority Challenge **7 *1 Lack of senior manager**

commitment *2 Ineffective communications with users *3 Insufficient

training of end-users *4 Failure to get user support *5 Lack of effective

project management methodology *6 Attempts to build bridges to legacy

applications *7 Conflicts between user departments *8 Composition of

project team members *9 Failure to redesign business process *10

Misunderstanding of change requirements *Table 2 .1: Ten major challenges

of ERP failure*/ Source: Huang et al. (2004)

Page 16 of 68 The pivotal role of

the hybrid ERP system is to engage customers, suppliers and employees for the business enterprise. However, they still need to be integrated with the company's back-office in order to be fully functional (Hoots and Wiley, 2015). However, during the process of implementing ERP software, it is imperative that **8 project managers,**

implementation partners and involved end-users are **informed** of the

following (Rosemann and Wiese, 1999): ? ? The company's processes are aligned to ERP software; The **8 selected ERP solution supports the needs of the system**

users (the internal customers); and ? **The development and the adaptation**

of the system to changing parameters are guaranteed.

The next section

discusses the critical success factors (CSFs) that are imperative in the implementation of ERP. In order to ensure that the company optimises on the benefits of the ERP and to minimise the challenges associated therefore, the following CSFs should be given due consideration. 2.7 **6 Critical Success Factors in the Implementation of**

Enterprise Resource Planning

Poonam (2010) defined CSFs as "the limited

number of areas in which satisfactory results will successfully yield competitive performance for individuals, departments or organisations". According to Finney and Corbett, 2007:334), CFSs "are those conditions that must be met in order for the implementation process to occur successfully". The initial brewing capacity for Carlsberg brewery before the implementation of ERP system was two million hectolitres per annum. That volume has since the ERP implementation increased drastically to thirty million hectolitres per annum and it became the best selling beer in the Island (Tsamantatis and Kogetsidis, 2006). The success of ERP implementations at these breweries are noted, however there is a high number of ERP systems failure. According to Ibrahim (2010) **6 /**ERP system implementation is a highly complicated**

task and * broad in scope for many larger companies and it could be

tremendously complex. In addition, * it takes months to implement the ERP

system and years to obtain the required

Page 17 of 68 benefits from * the

system*/. However, Ibrahim (2010) adds that benefits to the implementation of the ERP system are not easy to claim as companies are faced with a number of challenges

pre and post the implementation of the system. Ramsmy (2005:1) point out that "three quarters of the ERP projects are considered failures and many ERP projects ended catastrophically". Therefore it is essential for companies to take cognisance of CSFs (as discussed below) in order to ensure that the ERP system performs at its optimal level. 2.7.1 Top Management Support The ERP implementation inevitably results in organisational changes, hence it necessitates the engagement of top management. Finney and Corbett (2007:329) point out that top management support is referred to as the "degree to which executives understand the specific benefits of an ERP system and encourage implementation of new ideas and policies for implementing the system". According to Nah and Delgado (2006), top management support is acknowledged as one of the key internal CSFs of ERP implementation. Top management needs to be committed throughout an ERP implementation, provide leadership, provide the needed resources, provide encouragement and needs to publicly acknowledge the project as a top priority (Soja, 2006). Top management must be committed in their own involvement and have a willingness to allocate valuable resources to the implementation effort which ultimately strengthens the commitment of all the employees in the company (Ulrich, 2007). Hence, if top management is not committed to the implementation of ERP then a high risk of failure is inevitable. 2.7.2 Training the End Users Soja (2006) mentions that /**ERP implementation is not only a technical project, but also a *people project. According to Finney and Corbett (2007:331), end user training can be *recognised as "the degree to which a company reskills and professionally develops the IT Page 18 of 68 *workforce and those who will

interact with the system". ERP implementation evolves around **4** ***not only the**

change of technology, but also the change of tasks, structures, and

personnel *(Stewart, Milford, Jewels, Hunter, and Hunter, 2000)*/. Gupta

(2000) points out that **4** **one of the key challenges and CSFs in ERP**

implementation is end user training. A lack of end-user training results in

creating confusion, accuracies, questioning the credibility of the system and a decrease in user satisfaction which ultimately leads to implementation failure. Therefore,

companies must take cognisance of the fact that end **4** **user training is to train,**

retrain, and develop the workforce to understand how the system will

change business processes (Nah, Lau, and Kuang, 2001). Bradley (2008)

highlights that when the workforce is trained or retrained there will also be a reduction

in the **4** **resistance of change** which ultimately **positively affects the**

possibility of a successful ERP system implementation.

The company should

therefore ensure that intense investment in the training is made, and that **4** **on-**

site support for staff and managers during implementation are imperative.

2.7.3 Configuration Klein (2007:1366) state that /** "configuration is referred to as the degree to which a firm * matches the software application packages to

organisational processes". This means that * **4** **configuration is to adapt the ERP**

system to the company's business and to simultaneously * adapt the

company to the ERP system (Davenport, 2000). Hong and Kim (2002)

mention that * ERP implementation may result in radical organisational changes that require constant * management. 4 Unlike other software, ERP implementation

requires that organisational * processes are configured to fit the basic

business practices that are embedded in such * application packages.

Morton and Hu (2008) highlight that there can be conflicting interests * from ERP vendors and the company if configuration does not take place. Kimberling (2010) * points out that the ERP 2 failure or its termination is due to misalignment

between the company * and the software itself. He argues that very often

vendors make several releases of Page 19 of 68 new*/ versions of 2 their

ERP and the new release may or not be aligned with the needs and

requirements of the company (see Figure 2.3). Kimberling (2010) adds that uploading of data may take time as the employees will 2 not be able to use their

computers while the ERP system is uploaded. /** Figure 2 2 .3: Long-

term misalignment of ERP system *Source: Panorama Consulting Group

LLC (2010) */ 2.7.4 Adaptation Adaptation is when a company /** 4 accepts

and adjusts new technology and systems to cope * with changes (Hong and

Kim, 2002). 4 ERP is habitually a dynamic process of joint adaptation *

between IT and the surrounding environment */. Hong and Kim (2002)

mention that the successful implementation of the ERP system is dependent on the type and extent of ERP adaptation. 2.7.5 Information Technology Readiness Page 20 of 68 Investing in IT is considered as one of the critical business success factors that enable business enterprise to gain competitive advantage (Wickramasinghe and Karunasekara, 2012). Finney and Corbett (2007) and Soja (2006) concur that it is critical to assess the IT readiness of a company. This includes the company's skills (IT staff's ability) and infrastructure (Somers and Nelson, 2004). Lee, Lee, and Lin (2007) opine that irrespective of the extensiveness of IT, companies fail to elevate organisational efficacy due to poor employee acceptance of new technologies. "Companies with a higher level of technical expertise and infrastructure can be expected to master the technical aspects of business and contribute more to firm performance than firms with a lower level of technical expertise and infrastructure"

(Lee, Lee and Lin 2007:677). 2.7.6 7 Project Management Excellent project

management is another critical factor for successful ERP

implementation. **6 Project Management** entails the utilisation of skills and

knowledge in coordinating the scheduling and monitoring of defined

activities in order to make sure that the define objectives of implementation

projects are achieved (ALdayel and Al-Mudimigh, 2011). A project leader should

be identified prior to the start of the implementation of ERP. Markus and Tanis (2000) point out that during the chartering phase of the ERP system, a project leader is clear guidelines must be given to the project team in order for them to execute the objectives of ERP. In addition, their work plan which must be linked to their resource allocation plan must be determined as a team. If project leaders are not clued up with specific decision-making points, it will ultimately create significant problems. Companies should ensure that the project leader and has the necessary skills, expertise and knowledge to carry out the implementation of the ERP system. Skills are usually provided for by the ERP consultants in terms of training or answering any questions that may arise (Bhatti, 2002). After the installation of an ERP system, IT staff should be able to assist the project team to solve any problems without the help of consultants. In addition the project team members should be made up of employees

7 within the company and external experts with specialties in ERP. Page 21

of 68 2.7.7 Communication There should be effective communication between managers and employees as well as among employees to ensure the success of ERP implementation (Loh and Koh, 2004). Effective communication is when a company shares decisions, expectations, and goals throughout the organisation (Carmeli and Tishler, 2004). Effective communication also entails communication between departments, top management and vendors. Goals and expectations of the ERP system needs to be communicated throughout the chartering and implementation phase. In addition Loh and Koh (2004) highlight that effective communication entails clear instructions and messages which is turn avoids breakdown and confusion. Communication enables employees to feel more involved in the overall implementation process. A feeling of belonging helps produce interested, committed employees, which eventually enhances ERP implementation performance. Sarker and Lee (2003) point out that companies should get employees to understand what is changing, why it's changing, and how it will help the organisation which is ultimately crucial for the buy in of the ERP system. 2.7.8 Business Process Re-Engineering Business process re-engineering (BPR) requires to be involved in the implementation of hybrid ERP to avoid unnecessary incompatibility between the organisation's business processes with the packages software (Martin and Cheung, 2005). Ngai, Law and Wat (2008) recommend that a company's business processes should be re-engineered to fit the software as opposed to trying to force and compensate software to fit the organisations business processes. BRP is one of the CSF in the implementation of the ERP system (Soja, 2006). According to Hwang (2011), when a company's business processes are efficient, they can be more competitive in the marketplace. It is impossible to suggest any business processes without taking costs into account and the possibility of error could increase drastically if more software customisation were undertaken (Martin and Cheung, 2005). Such errors may deter companies from approaching ERP customisation on the magnitude that require less effort. Mutual fit between the organisations and their selected ERP package or modules is critical to the success of the implementation (Ngai, Law and Wat, 2008). Technological Page 22 of 68 collaboration of different technologies available in an organisation requires to be working towards achieving the similar desired effects by the organisation (Martin and Cheung, 2005). Figure 2.4 depicts interrelated business processes of an organisation that is working with an ERP software package that enables business enterprise's departments to work in cohesion to achieve similar organisational strategic goals and objectives. Figure 2.4: Business

workflow with ERP system implemented in an organisation Source: Pieterse (2010) Page 23 of 68

2.8 Hybrid Enterprise Resource Planning in Other Global Business Enterprises Tsamantatis and Kogetsidis (2006) argued that Keo and Carlsberg breweries' productivity increased considerably after they adopted ERP system. The production volumes of Carlsberg brewery increased from two million hectolitres to 30 hectolitres per annum after the adoption of hybrid ERP (Tsamantatis and Kogetsidis, 2006). They further argue that it is essential for the companies to carefully and strategically select the ERP modules they would need to embed in accordance with their organisational needs, dynamics and processes. Effective ERP systems improve a company's responsiveness and flexibility which greatly influences successful supply chains (Chang, Cheung, Cheung, and Yeung, 2009; Chan and Chan, 2010). It is therefore apprehensible that it is not just an implementation of ERP systems that could help business enterprises either maintain or become more competitive, but a proper selection of ERP modules should be taken into account as one of its CSF constituency (Huang and Wang, 2014). Carlsberg and Keo breweries embedded a variety of ERP modules in their organisations which included amongst others the assets module, controlling (managerial) accounting module, sales and distribution module, materials management (inventory accounting), production and production planning as well as quality management from different software suites and vendors (Tsamantatis and Kogetsidis, 2006). It was only after ERP implementation at these organisations that they managed to accurately plan their production volumes in order to respond to the predicted demands in their local markets. Masini and Wessehove (2009) argued that it remained a challenge for the firms to properly select an effective ERP strategy. However, business organisations need to increase their investment in information technology in order to improve their efficiency and responsiveness of operations as they are confronted by turbulent markets, blurred technological landscapes and fierce competition or rivalry for their market share (Wickramasinghe and Karunasekara, 2012). Page 24 of 68

2.9 Improving Efficiency through Benchmarking Goncharuk (2008) argued that one of the best tools and techniques that enable the key success factors and opportunity for improvement is through benchmarking. This allows top management to have a full imagine of their enterprise's shortcomings, its weak points and capabilities of their elimination as well as improving efficiency and quality. The performance competitive benchmarking is expedient to use covering majority of enterprises in the industry in question Goncharuk (2008). It is rewarding to conduct this process of benchmarking internationally should it happen that factors like too rigid competition, lack of information about competitors if there are any (Goncharuk, 2008). Developed economies such as the United States of America and many other European countries (especially manufacturing companies) invested heavily on IT, mainly ERP systems (Masini and Wessenhove 2008; Ngai, Law and Wat, 2008:549). In the South African context SABMILLER is arguably dominating the beer market with very little market share gained by their emerging competitors like Brand house. For the purpose of this study the benchmarking conducted at Ukraine for Ukrainian breweries against other breweries in the world has been taken into account as it reflects SABMILLER in many instances (Hoots and Wiley, 2015). The benchmarking of the Ukrainian breweries (see Annexure E) allowed the team at SABMILLER to determine whether its ERP implementation was aligned and whether it would add value in maintaining the competitive advantage that is needed to compete both locally and globally.

2.10 Enterprise Resource Planning Evaluation and Selection Stakeholders Different stakeholder groups are needed to understand ERP evaluation and selection in order that they are able to make informed decisions. Yu (2007) recognised five parts that are involved in information software investments, each with their own set of objectives and expectations. Table 2.2 provides an overview of ERP evaluation and selection process. Page 25 of 68

Stakeholders Objectives and expectations Management (key users) Interested in financial and any other gain generated by the investment End users Seek to ensure that the project is implemented on time within budget and to user requirements. Project team (implementers) Technology should meet their requirements whilst integrating flexibility to adopt to the changing requirements of users and /or customers. Supporters (sub-contractors) Focus on short-term criteria set sponsors (used to judge their performance). Focus on short-term criteria. Consists of many groups, each with its own goals and objectives not benefit from or influence the investment. Others (stakeholders Might support or oppose the investment possible covert resistance. Table 2.2: Investment stakeholders in IS Source: Yu (2007)

Understanding as to who should conduct the ERP evaluation process could explain as to what extent or degree the intended outcome of evaluation could be recognised. It is therefore of utmost importance to consider different stakeholders, stakeholders' groups, different positions and interests when considering an ERP system for any business enterprise. Thompson, Strickland and Gamble (2005) outlined that strategy is an exercise of an astute and actively focused entrepreneurship actively involved in doing old things in a new way or embarking on restructuring the workflow and embark on totally doing things in new ways. 2.11 The use of the Balanced Scorecard This concept from its inception by Adries Kaplan in 1992 from Harvard School of Business in USA has been widely used as a method of evaluation. It is always useful to define concept before it is applied onto any sphere of life. According to Noreen, Brewer and Garrison (2011) Page 26 of 68 the Balanced Scorecard (BSC) can be defined as the mechanism that consists of an integrated set of performance measures that are derived from and support the company strategy. The BSC concept insight enables corporate decision makers to use it to select, measure and evaluate amongst others

the IT related investments. /** 8 **In order to structure the management * of**

ERP software, the related tasks can be divided into the process of

implementing ERP * software */ and the operational use of ERP software.

Hence in order to evaluate 8 **both tasks the BSC (a framework to structure**

the relevant key performance indicators for Performance Management) can

be applied (Kaplan and Norton 1993). Salem, Hasnan and Osman (2012) add that the BSC was developed as means to evaluate corporate performance by focusing mainly on 9 **four different perspectives, namely: ? Financial perspective; ?**

Internal business process perspectives; ? **Customer** perspectives; and ? **The**

learning and development perspectives. By taking into account these four

perspectives this tool could be used to select, 9 **measure, evaluate and guide**

activities that take place in specified business **areas** such as the selection of

suitable ERP system software solution for any business enterprise. The BSC framework could effectively add value if adequately used for the ERP project selection as shown in Table 2.3. Users orientation Business Value perspectives (End-user perspectives)

9 **(Management's view) Mission** Mission **Deliver value-adding** ERP solution to

end users Contribute to the 9 **value of the business Key Question** Key

Question **Is** ERP project fulfilling the need for our end Is ERP accomplishing our

goals and Page 27 of 68 users? 9 **contributing value to the organization as a**

whole? Objectives ? Establish and maintain a good image and reputation with end-users; ? Exploit ERP opportunities; and ? Establish a good relationship with end- users

and satisfy end-user requirements. Objectives ? Establish and **9 maintain a good**

image and reputation with management; ? Ensure that the ERP project

provides business value; and ? Control ERP project costs. Internal business

9 processes perspective (Operations based view) Future readiness

perspective (Innovation and learning view) Mission Deliver ERP solution in

an efficient and effective manner Mission Deliver continuous improvement and prepare for future challenges Key Question Will the ERP project create, deliver and maintain support to our product and service in an efficient manner? Key Question Is the ERP project improving products and services and preparing for potential change and challenges? Objectives ? Anticipate and influence requests from end-users and management; ? Be efficient in acquiring and testing hardware and software tools; ? Provide cost-effective training that satisfies end-users; and ? Effectively manage ERP

related problems that arise. **9 Objectives ? Anticipate and prepare for ERP**

related problems that could arise; ? Continuously upgrade ERP skills and

knowledge **through training and development; ? Regularly upgrade ERP and**

related **IT portfolio; and ? Conduct cost-effective research into** Page 28 of 68

emerging technologies and their suitability for business. Table 2.3: ERP project selection Source: Yu (2007) 2.12 Summary ERP software is installed in a company's computers. The implementation of the ERP system means integrating **2 a number**

of business modules, which can cover almost every feature of the

company's business activities and processes. The implementation of hybrid

ERP system helps a company to gain or maintain their competitive advantage on the stages of the market where they compete. Literature has indicated that ERP software is not a very simple and straightforward solution. Employees' attitudes or behaviours even at the lower levels could have an impact on the company's operation abilities. When a company implements the ERP system, it comes with both benefits and challenges. However, in order ensure the effectiveness of ERP, CSFs needs to be given due consideration. The next chapter discusses the research methodology utilised for this study. Page 29 of 68 CHAPTER THREE RESEARCH METHODOLOGY 3.1 Introduction Wilson (2010) contend that conducting a study is a process concerning collecting, analysing, and interpreting data collected so that a particular phenomenon could be understood. This process involves defining the study's objectives, managing data so that the established findings could be communicated in a systematic way in accordance with guidelines and established framework (Wilson 2007). Collins and Hussey (2014) contend that seasoned researchers recommend that it is imperative for those conducting studies to make use of suitable methodologies. This chapter discusses the research design, ethical issues, procedure for sample selection, data collection method or mechanism as well as the data analysis process. 3.2 Research Design One of the most vital parts of conducting a study is for the researcher to appropriately formulate a research design. According to Sekaran and Bougie (2010) it is essential to consider the fact that the /** more sophisticated and rigorous the research design is, the greater the time and * costs */ to be used effectively. /** A descriptive survey which is concerned with identifying * and counting the frequency of a specific population, either at one point in time or at various * for comparison*/ has been used for this study.

According to Singh (2011) /** research design is a blue print for data collection which is designed to answer research questions*/. Saunders, Lewis and Thornhill (2012) mention that there are three research designs that are often used for any research and are as follows: 3.2.1 Exploratory Studies Page 30 of 68 This kind of study is more useful in investigating subject matters where there is very little or no knowledge associated with research project under study (Hair, Celsi, Money, Samuel and Page, 2011). The fundamental objective of this kind of study is to look for patterns, ideas or hypotheses (Collins and Hussey 2014). It concerns itself with this rather than testing or confirming a hypothesis. 3.2.2 Descriptive Study Collins and Hussey (2014) /** described this kind of study as that which is used to describe * phenomena as they exist. Collins and Hussey (2014) state that statistical techniques are * frequently used as data collected in this kind of study is often quantitative in nature. These * kind of studies provide wealth of information about the environments */ , people living in them as well as their circumstances. Quantitative and qualitative research methods are the

integral parts of descriptive research methods. 3.2.3 **1 Explanatory Research**

The / aim of the explanatory research is to study a situation or a problem**

in order to explain * the relationships between variables*/. For this

research a descriptive- explanatory research design was utilised. The

descriptive research was used /** **1 as a precursor to explanatory research in**

that after the findings were * described from the statistics obtained an

explanation was given for each test item */. 3.3 **The** Research Philosophy Page

31 of 68 Bryman and Bell (2007) point out that the /** **1 research strategy can**

take the form of two * approaches namely quantitative and qualitative

research */ as discussed in Table 3.1. Quantitative Approach Qualitative Approach

Quantitative data is a numerical data (Hair et al, 2010). This approach is considered objective enough to eliminate any elements of being biased in the research process (Collins and Hussey, 2014). Qualitative data is a nominal data. Facts are presented in a narration of words (Jonker and Pennink, 2010). This method is more subjective in nature and has been described as an 'array of interpretative techniques which seek to describe, decode, translate and otherwise come to terms with the meaning, and not with the frequency' (Collins and Hussey, 2014). Research methods and process: Respondents cannot freely express data in a way that might not be captured on a spreadsheet coded rows and columns. The researcher plans, executes and focus control on all components in the way the study and instruments were designed (Sekaran and Bougie, 2010). Research methods and process: There is not much emphasis on controlling research components. (Sekaran and Bougie 2010; Collins and Hussey, 2014). Quantifying and counting the observable phenomena is at the core focus by collecting and analysing numerical data and applying statistical tests (Collins and Hussey, 2014). The main objective of this method in conducting studies is to enter into a situation, attempt to bring about change and to monitor the results. Due to the required closeness between the researcher and the client company a number of problems usually arose (Collins and Hussey, 2014). Page 32 of 68 Researcher's standpoint in the process: Researcher's standpoint in the process: Researcher chooses not to be directly involved lest he / she be construed as someone influencing the study's outcome in a particular way (Hair et al., 2010). Researcher bears the burden as his / her position is considered the 'most important' to be unbiased when interpreting

the study's findings (Collins and Hussey, 2014). Table 3.1: A Comparison between the quantitative and qualitative approach A quantitative analysis approach was used for this study. Having taken into account the objectives, the limitations of this study and the nature of the organisation in question, a quantitative methodology/technique appeared as the most appropriate for this study. The primary reason for choosing this data collection method was due to the fact that it was convenient and palatable in interpreting the respondents' responses in a more scientifically proven way. 3.4

Research Strategy For this /** 1 **study the survey in the form of a**

questionnaire was used to gather primary data

* that was needed. The

survey can be 1 **used to gather the same primary data from large groups ***

of people and may incorporate demographic information, opinions or

satisfaction levels

*/ (Choudrie and Dwivedi, 2005). 3.5 Target Population

Sekaran and Bougie (2010) state that the most logical starting point for a primary research study is to define the population of the research before deciding on how large a sample should be. Keller (2009) defines population as a group of all items of interest to a statistics practitioner or the researcher. The target population for this study was the end-users of the Page 33 of 68 hybrid ERP system at the Prospecton brewery of SABMILLAR. There are approximately 337 end-users at the brewery. 3.6 Sampling Strategy It is not always possible to study the entire universe or population due to the nature of dynamics associated with it though it would provide the weight and accuracy of the research findings (Keller, 2009). There are two key types of sampling namely

probability and non- probability sampling. 1 **/**Fox and Bayat (2007) mention**

that **probability sampling** involves a **sample selection * method where the**

sample members (elements) are chosen from the target population on a *

purely random (chance) basis*/. This selection process guarantees that

every individual of the target population has a known and non-zero

probability of being incorporated in the sample.

/** 1 **In non-**

probability sampling, the researcher has no way of calculating or

guaranteeing that * each element of the population will be represented in

the sample

(Leedy and Ormrod, 2010)*/. 1

/Non-probability sampling**

is generally used where it is convenient and cost-effective to do so*/

as was

the case in this study. For this study due to the fact that a complete sampling frame was difficult to establish, a non- probability sampling was used for this study. Monette, Sullivan and De Jong (2010) stated that when it is extra-ordinarily difficult to establish a sample frame then non-probability sampling may be embarked upon. /**The

convenience sampling which is an example of non- probability

1 ***sampling**

allows for members of the target population to be selected for the sake of

***convenience** in that **they are near** or **readily available** to participate in the

study*/ (Welman et al., 2005). The sample size selected for this study was 201. 3.7 Research Instrument Page 34 of 68 Questionnaires are considered the most flexible, dynamic and most commonly used primary data collection instrument (Sekaran and Bougie, 2010). For the purposes of this study a questionnaire was chosen as the primary data collection instrument. According to Collins and Hussey (2014), /**questionnaires are a carefully structured list of questions with a view to elicit reliable responses from a chosen sample*/. Page 35 of 68 3.7.1 Questionnaire Construction The questionnaire was developed after a literature search and was based on the five point Likert-style rating scale. /**Singh (2011) outlined that Likert scale turns the questions into a *statement and ask the respondents to indicate their level agreement or disagreement with the *statement */. The questionnaire was designed as follows: ? Section A: Demographic Information; ? Section B: Research objective: To determine the involvement of key stakeholders during the implementation of the hybrid ERP system at SABMILLER (Prospecton Brewery); ? Section C: Research objective: To determine the benefits of using Hybrid ERP systems at SABMILLER (Prospecton Brewery); and ? Section D: Research objective: To determine the challenges that SABMILLER (Prospecton Brewery) encountered during the utilization of the Hybrid ERP system. 3.7.2 Pilot Study A pilot study was conducted to determine the reliability of the research instrument. Five end- users assisted to peruse the questionnaire for language, clarity of questions and time taken to complete the questionnaire. The respondents mentioned that the questionnaire was easy to understand, the questions were clear and that the questionnaire could be completed in 20 minutes. 3.7.3 Administration of the Questionnaire The questionnaire was personally distributed to 201 selected respondents. Respondents were only required to answer one set of questions which was personally distributed to them. The nature and purpose of the questionnaire was explained to them. They were given two weeks Page 36 of 68 to complete the questionnaire. However many did not complete the questionnaire within the given time, hence another week was given. 3.7.4 Collection of Questionnaire At the end of the third week it was realised that it was a challenge to get back responses. More time was given and every week a reminders were sent out. This process went on for approximately twenty one months as respondents continuously promised to complete the questionnaire. However, due to time constraints to complete this study only 31 questionnaires were collected for analysis. 3.8 Data Analysis Collins and Hussey (2014) state that analysis of data forms an integral part of any research project. Statistics has the most powerful tools to conduct analysis (Keller, 2008). Statistical methods used for summarising data is referred to as descriptive statistics whereas the methods for making decisions or predictions about a population is referred to as inferential statistics (Keller 2008). This study utilised descriptive statistics to make decisions. Figure 3.1 depicts the data analysis process throughout different stages involved from data collection, cleansing of data for analysis, analysis process, interpretation of results, discussion all the way to ascertain whether the research questions were answered. Page 37 of 68 Figure 3.1: Data Analysis Process Source: Sekaran (2003) The questionnaires were perused to ensure that it is was not spoiled. The Statistical Programme for Social Sciences (SPSS) package was used to analysis the findings. Graphs were generated and the statistics were explained and described to be more meaningful. 3.9 Reliability and Validity It is essential for researchers to ascertain whether their study's findings are of quality standards (Lyons and Doueck, 2010). Validity and reliability are important criteria to establish this. According to Collins and Hussey (2014) validity concerns itself with the establishing whether data collected whether data collected is a true picture of what was being studied whereas reliability usually means dependable or trustworthy. In order to ensure content validity the

1 opinion of experts in the area of focus on the /adequacy of research**

Page 38 of 68 instrument was sought*/. The literature gathered for this study was utilised to ensure the reliability of the questions that were inserted in the questionnaire. In addition, the language used was simple and statements were clearly

written. 3.10 Limitations of the study The study had many limitations. The use of a quantitative approach does not allow for any type of in-depth answers from the selected sample. The sample was limited to only the end users of the Prospecton Brewery. Sourcing information from SABMILLER at the time when they were pre-occupied with a merger proved to be a limitation. It took the respondents approximately twenty one months to return completed questionnaires. After constantly appealing to respondents, only 31 questionnaires were returned. Due to time constraints to complete this study, 31 questionnaires were used to complete the analysis. Hence the findings from this study cannot be generalised to the population of SABMILLER. 3.11 Elimination of Bias The following was ensured in order to avoid bias (Brynard and Hanekom, 2011): ? /**Questions should not force a favoured response; ? *The sample must be appropriately selected; and ? *Accurate and comprehensive questions should be asked*/. /**In addition the language used was simple and clear. Both male and female were included in the study*/. Page 39 of 68 3.12 Ethical Considerations Permission was granted by the Regional Information Systems Manager at SABMILLER (Prospecton Brewery) manufacturing systems to conduct a study with them (Annexure C). Ethical clearance from the University of KwaZulu-Natal, Research Office was also obtained (Annexure D). In addition, every respondent selected was over the age of 18 years and hence could participate. Respondents were informed in the letter that was attached to the questionnaire that they participation was voluntary and their information would be kept confidential. The respondents were also informed that they could withdraw from the study if they felt a need to do so. 3.13 Summary This chapter has identified this study's research design and justifies the use of the quantitative approach as opposed to qualitative approach. The questionnaire which is typically used in a quantitative approach was selected as the research instrument. All ethical considerations was ensured during this study. The next chapter presents the analysis of the primary findings for this study. Page 40 of 68 CHAPTER FOUR ANALYSIS OF DATA, INTEPRETATION AND FINDINGS 4.1 Introduction This chapter presents the results obtained in this study by analysing the data that was collected for this study. The primary data was analysed through the use of the SPSS and package. The findings are presented in graphs and tables and interpreted to be more meaningful. The

findings are **1** aligned to the literature review that was gathered for this

study.

4.2 Response Rate Only 31 respondents from the selected sample of 200

returned the completed questionnaire for this study. The response rate was 15.5%.

Comment [R1]: Calculate the response ra in % 4.3 Reliability Tests Reliability Statistics Cronbach's Alpha N of Items .745 26 Table 4. 1: Cronbach's Co-efficient Alpha:

reliability statistics Reliability: Cronbach's Alpha is greater /**than **5** 0.7,

therefore the findings reveal that the scale was very reliable ($\alpha = 0.745$,

n*/

= 26). Twenty six /**variables were tested which *yielded a Cronbach's Alpha

of*/// .745. This means that the questionnaire has a higher degree of reliability and that items in questionnaire has a high degree of reliability and the items in the questionnaire have an acceptable level of inter-item consistency. It should however be mentioned that table Annexure G shows that the rows coloured in green could have been rephrased to give a higher result. Page 41 of 68 4.4 Chi-squared (x2) test

statistics **5** /**A chi-square test is a test of statistical significance, which is

typically employed to establish *how confident one can be that the

findings displayed in the contingency table can be *generalized from a

probability sample to a population (Bryman, 2008:691). The frequently
 *used method to reporting a result requires a statement of statistical
 significance. A p-value is *generated from a test statistic. A significant
 result is indicated with " $p < 0.05$ ". The chi-*square test looked at whether
 there was any relationship between the column variables and *row
 variables (statements)*/. The results presented in Annexure G, which
 shows that there is a significant relationship between gender and the
 following statement: ? Its operations should be centrally controlled: $p = 0.004$.

In addition, Annexure H, shows there is a significant relationship between age and the following statement: ? Hybrid ERP makes manufacturing systems back-up optimum: $p = 0.042$. Further, Annexure G, shows there is a strong relationship between department and the following statements: ? We did not have effective project management when implementing this software: $p = 0.007$. ? ? I would like to become a professional in ERP system: $p = 0.019$. It has enabled manufacturing system trends (dynamic and static) by end-users throughout the plant: $p = 0.003$. ? Interdepartmental systems integration processes have improved significantly: $p = 0.006$. Page 42 of 68 ? Business process re-engineering (BPR) is practically feasible in a cost effective way: $p = 0.045$. The association between column variables [gender, race, age group and department] and the other statements in Annexure G is not statistically significant at the 95% level ($p > 0.05$). The above reflected results supported the results in the data analysis process.

4.5 Analysis of Data Each test item from the questionnaire was analysed and presented in Figures below.

4.5.1 Section A: Demographic Information

4.5.1.1 What is your Gender? 80.0 60.0 40.0 74.2% 20.0 25.8% 0.0 Male Female Figure 4.1: Gender of respondents Figure 4.1 gives an indication that more males (74.2%) participated in the study as compared to 25.8% of female participants. Page 43 of 68

4.5.1.2 What is your Race? 50.0 41.9% 40.0 25.8% 30.0 19.4% 20.0 12.9% 10.0 0.0% 0.0 African Indian Coloured White Other Figure 4.2: Race of respondents Comment [R2]: Daniel please Change the term black on the figure Figure 4.2 indicates that 41.9% of respondents are African, 25.8% constituted Indians, Whites 19.4% and 12.9% are Coloureds.

4.5.3 What is your Age Group? 50.0 40.0 30.0 20.0 10.0 0.0 12.9% 41.9% 35.5% 9.7% 21-29 Yrs 30-39 Yrs 40-49 Yrs >49 Yrs Figure 4.3: Age group of respondents Figure 4.3 indicates that 12.9% of respondents were in the age category of 21-29 years while 41, 9% of respondents were in the age category of 30-39 years. A further 35, 5% was made up of the age category of 40-49 years whereas 9, 5% was made up of the age category of above 50 years. Maurer and Barbeite (2011:4) argue that there is a dialectical relationship between age and job performance which subsequently impacts on organisational effectiveness. Maurer and Barbeite (2011) further argue that it is essential to manage all four Page 44 of 68 generations in the workplace, that is, the veterans, the baby boomers, generation X as well as the generation Y (Millenials).

4.5.2 Section B: Research Objective: To Determine the Involvement of Key Stakeholders during the Implementation of the Hybrid ERP System at SABMILLER (Prospecton Brewery)

4.5.2.1 Where you involved in the decision making of the hybrid ERP system at SABMILLER (Prospecton Brewery) Stakeholder Highest Percentage of Involvement Executives (top management) 77. 4% Administrative 80.7% Engineering 68% Finance 87.1% HR 74% Legal 77.4% IT 74% Supply Chain 80% Marketing 74.2% Research and Development 74.2% Distribution and Warehousing 95.1% External Consultants 90.3% Table 4.2: Highest percentage of stakeholder's involvement Table 4.1 indicates the findings from the study that shows which departments were involved in the decision making of

hybrid ERP and also the percentage of their involvement. The findings are indicative that the key holders necessary for ERP was involved in the decision making phase. Nah and Delgado (2006), point out executives (top management) support is recognised as one of the key internal CSFs of ERP implementation. Their commitment (in terms of leadership, resources, finance, encouragement, etc.) is necessary throughout the implementation of ERP. In addition, in order for the ERP system to fully integrated and Page 45 of 68 functional, it is necessary for staff from every department to be actively involved from the decision making to the implementation of ERP. Section C: Research Objective: To Determine the Benefits of using Hybrid ERP Systems at SABMILLER (Prospecton Brewery) This section attempts to determine the benefits of using hybrid ERP systems. 50.0 40.0 45.2% 30.0 38.7% 20.0 6.5% 10.0 0.0 Highly Important Moderately important important Figure 4.4: Hybrid ERP increases integration 3.2% 0% Somewhat Not at all unimportant important According to Figure 4.4, the majority (45.2%) of the respondents indicated 'highly important' to the statement that hybrid ERP increased integration. A further 38.7% of the responses indicated that it was important. Six point five percent (6.5%) indicated that increased integration was only moderately important to be attained whereas 3.2% of respondents indicated that increased integration at the brewery was somewhat unimportant. Cooke, Guha and Filsoof (2013) posit that the integration of the old and new applications into becoming

"hybrid ERP" **11** systems enables specific business functions such as supplier

management, re-order period **and** lead time of inventory to operate with greater agility as opposed to what could be attained in old-style IT organisation. Hoots and Wiley, (2015) add that the pivotal role of the hybrid ERP system is to engage customers, suppliers and employees for the business enterprise. In addition, the hybrid

ERP system **3** enables companies to integrate their business processes and

all information relevant to their organisation in order to improve their

communication and real time (Nah and Delgado, 2006). Page 46 of 68 60.0 50.0 54.8% 40.0 30.0 20.0 22.6% 9.7% 6.5% 10.0 0% 0.0 Highly important Important Moderately Somewhat Not at all important unimportant important Figure 4.5: Hybrid ERP reduces the number of software tools required to support manufacturing systems Figure 4.5 shows that the majority of respondents (54.8%) indicated that hybrid ERP reduces the number of software tools required to support manufacturing systems. A further 22.6% of the respondents responded that it was highly important, 9.7% found it moderately important, while only 6.5% saw this as somewhat unimportant. Tsamantantis and Kogetsidis (2006) point out that the ERP concept came into existence in order to form a comprehensive system which integrated all functional areas and transactional processing activities in the business enterprise in its entirety. Yu (2007) adds that the ERP system allows for information to be kept on one software system which brings convenience and increases communication in the entire company. In addition the use of one software allows for staff to keep track of orders more easily, coordinate inventory and shipping and manufacturing amongst many different location simultaneously. 50.0 48.4% 40.0 35.5% 30.0 9.7% 20.0 0% 0% 10.0 0.0 Figure 4.7: Hybrid ERP increases accessibility and quality of product support Page 47 of 68 Figure 4.7 reveals that a collective 83.9% of the respondents indicated that hybrid ERP increases the accessibility and quality of product support. Ngai, Law and Wat (2008) mention that ERP systems is the catalyst that improves business work efficiently and significantly, increases productivity and service quality which ultimately leads to

6 a reduction in operations cost as well as effective decision-making. 50.0

40.0 48.4% 30.0 20.0 10.0 0.0 25.8% 16.1% 3.2% 0% Highly important Important Moderately Somewhat important unimportant important Not at all Figure 4.8: Hybrid ERP increases adaptability and flexibility of software According to Figure 4.8, a collective 74.2% of the respondents indicated that hybrid ERP increases adaptability and flexibility of software. A further 16.1% of the respondents found it moderately important, while 3.2% saw this as somewhat unimportant. Chang et al. (2010) point

out that effective ERP systems improve a company's adaptability and flexibility which greatly influences successful supply chains. 45.0 40.0 35.0 30.0 42.95 25.0 20.0 15.0 39.3% 14.3% 3.6% 10.0 5.0 0.0 0% Highly Important Moderately Somewhat Not at all important important unimportant important Figure 4.9: Hybrid ERP has compatibility

with existing hardware Page 48 of 68

1 In Figure 4.9 it can be seen that a

collective 82.25% of the respondents indicated that it is important for hybrid

ERP to be compatible with existing hardware, 14.3% consider it moderately important, whilst 3.6% consider it somewhat unimportant. According to Martin and Cheung (2005) in order for hybrid ERP systems to be compatible with existing hardware some degree of BRP needs to be undertaken in the implementation stage. Hwang (2011) highlights that when a company's business processes are efficient, they can be more competitive in the marketplace. 50.0 40.0 30.0 45.2% 20.0 32.3% 16.1% 10.0 0% 0% 0.0 Highly Important Moderately Somewhat Not at all important important unimportant important Figure 4.10: Hybrid ERP's compatibility with the existing operation software Figure 4.10 indicates a collective majority of 77.5% of the respondents who indicated the importance of hybrid ERP being compatible with the existing operation software. Only 16.1% of respondents saw this as moderately important. Hwang (2011) mentions that unlike other software, in order for the successful implementation of ERP there needs to be a configuration of organisational processes that fits the basic business practices that are embedded in such application packages. Lee, Lee and Lin (2007) indicates that companies that encompass higher level of technical infrastructure can be expected to master the technical aspects of business and contribute more to performance than firms with a lower level of technical infrastructure. Page 49 of 68 50.0 40.0 30.0 20.0 41.9% 41.9% 10.0 6.5% 3.2% 0% 0.0 Highly important Important Moderately important Somewhat Not at all unimportant important Figure 4.11: Hybrid ERP is consistent with interface and user-friendly operations Figure 4.11 reveals that 41.9% of the respondents rated the above statement as highly important whereas another 41.9% rated it important. A further 6.5% rated the above statement as moderately important, whilst 3.2% responded 'somewhat unimportant'. One of the objectives of ERP is to deliver value-adding solution to end users (Yu, 2007). Hoots and Wiley (2015) add that a driving force behind hybrid ERP is a demand for better end-user experience. Hence, an improvement in organisational performance leads to better customer service (Ng, 2006). 45.0 40.0 35.0 30.0 25.0 20.0 15.0 38.7% 41.9% 6.5% 6.5% 10.0 5.0 0.0 0% Highly Important Moderately Somewhat Not at all important important unimportant important Figure 4.12: Hybrid ERP is easily understood and is a

well-designed business decision- making support information system

1 In Figure

4. 12 it can be seen that a collective majority of 80.6% of the respondents

rated important to the statement that hybrid ERP is easily understood and is a well-designed business decision-making support information system. A further 6.5% responded to the above Page 50 of 68 statement as moderately important with the remaining fraction (6.5%) responded that it was somewhat unimportant. Hwang (2011) points out that ERP systems provides enhanced accessibility to data which enables management to have up-to-date access to information for decision making and managerial control. In addition, an ERP system helps track actual costs of activities and perform activity based costing. 90.0 80.0 70.0 80.6% 60.0 50.0 40.0 30.0 12.9% 20.0 0% 6.5% 0% 10.0 0.0 Strongly Agree Neutral Disagree Strongly agree disagree Figure 4.13: Inventory planning has improved significantly through hybrid ERP Figure 4.13 indicates that 96.5% of the respondents agreed with the statement, whilst only 6.5% disagree. Tsamantanis and Kogetsidis (2006) mention that the need for the ERP system arose as a result of companies wanting to control the actual as well as the assumed inventory levels. 100.0 80.0 90.3% 60.0 40.0 20.0 3.2% 0% 6.5% 0% 0.0 Strongly Agree Neutral Disagree Strongly agree disagree Figure 4.14: Raw materials planning became optimum as a result hybrid ERP installation Page 51 of 68 Figure 4.14 illustrates that majority of respondents agree with this statement. An overwhelming collective 93.5% agree that raw materials planning of the brewery became optimum

after the implementation ERP systems whilst only 6.5% argue otherwise. ERP encompasses the planning and managing of the company's raw materials and

12 resources in the most efficient, productive, and profitable manner

(Barker and Frolick, 2003).

Trott and Hoecht (2004) add that the **3** **benefits**

of hybrid ERP systems are linked to effectiveness and efficiency of business

processes because companies **can get more accurate and timely**

information. 60 50 51.6% 40 30 38.7% 20 10 0% 3.2% 0% 0 Strongly Disagree

Neutral Agree Strongly disagree agree Figure 4.15: ERP has improved the company's efficiency Figure 4.15 illustrates that a collective majority (90.3%) of the respondents agree with this statement while 3.2% remained neutral. Dennis et al. (2006) argue that users can achieve specified goals in relation to the accuracy and completeness if they were to be acquainted with resources expended in relation to specified goals in a particular environments. Basoglu et al. (2007) add that a company that implements

3 an ERP system can have benefits such as fast and accurate information

gathering, quick decision making, low inventory cost, improved interaction

with customers, and improved product quality.

The results are indicative that

hybrid ERP system has improved the company's efficiency. Page 52 of 68 100.0 80.0 90.3% 60.0 40.0 6.5% 20.0 0% 3.2% 0% 0.0 Strongly Agree Neutral Disagree Strongly agree disagree Figure 4.16: Hybrid ERP makes manufacturing systems to have optimum back-up Figure 4.16 illustrates that a collective 96.8% of the respondents agree with the above statement while only 3.2% disagree. According to Hoots and Wiley (2015), data is posted to hybrid ERP once its quality has been checked by the back office passive data governance solution which ensures data integrity is maintained in the production environment. Hoots and Wiley (2015) also mentions that the service level agreement is monitored by users to identify violations or check data error reports, which ultimately leads to an optimum back-up of a company's manufacturing systems. 60.0 50.0 58.1% 40.0 30.0 22.6% 12.9% 20.0 10.0 0% 0% 0.0 Strongly Disagree Neutral Agree Strongly disagree agree Page 53 of 68 Figure

4.17: Overall satisfaction with the software

1 Figure 4. 17 reveals that a

collective majority of the respondents

(80.7%) indicated their agreement with

the overall satisfaction of the software. A further 12.9% of the respondents remained neutral. Cooke, Guha and Filsoof (2013) point out that the ERP system provides overall satisfaction to any company in that the benefits includes customer engagement, procurement management, employee engagement as well as the implementation speed. 80.0 70.0 60.0 50.0 40.0 30.0 20.0 10.0 0.0 12.9% 77.4% 0% 0% 6.5% Strongly agree Agree Neutral Disagree Strongly disagree Figure 4.18:

Interdepartmental systems integration have improved significantly Figure 4.18 indicates that a collective majority of 90.3% of respondents agree with the statement with only 6.5% strongly disagreeing. Pieterse (2010) points out that the ERP software package that enables business enterprise's departments to work in cohesion to achieve similar organisational strategic goals and objectives which ultimately improves the integration amongst interdepartmental systems. The findings have indicated that the majority (90.3%) of the respondents are in agreement that interdepartmental systems integration have improved significantly. Page 54 of 68 40.0 35.0 30.0 25.0 20.0 15.0 35.5% 32.3% 16.1% 10.0 6.5% 3.2% 5.0 0.0 Highly important Important Moderately Somewhat Not at all important unimportant important Figure 4.19: Hybrid ERP reduces

dependency on a number of key employees Figure 4.19 indicates that 35.5% of the respondents mentioned highly important, 32.3% mentioned important to the statement that hybrid ERP reduces dependency on a number of key employees. A further 16.1% of the respondents indicated that it was moderately important, 6.5% concede that it was somewhat unimportant whilst only 3.2% concede that it was not at all important. Sarker and Lee (2003) indicate that the three social enablers to the success of ERP is a strong and committed leadership, open and honest communication, and a balanced and empowered implementation team. Nah et al. (2003) add that the presence of a project champion is needed in order to ensure the efficiency of the ERP implementation. Page 55 of 68 Section D: Research Objective: To Determine the Challenges that SABMILLER (Prospecton Brewery) Encountered during the Utilization of the Hybrid ERP System 60 50 40 30 20 10 0 0% 3.2% 3.2% 58.1% 29.0% Strongly disagree Disagree Neutral Agree Strongly agree Figure 4.20: Time taken to gain confidence in the ERP system

According to **1** **Figure 4. 20 reveals that the majority of 58.1% of the**

respondents agreed, 29% strongly agreed, 3.2% disagreed, whilst 3.2%

remained neutral to the statement that it took a long time to gain the confidence for the system to go live. Davenport (2000) mentions that the major elements of a rational approach to implementing an ERP system is to not only prepare the technical system, but also the employees must be prepared. Bradley (2008) points out that user training has a positive effect of the successful implementation of the system. Hence preparing the employees is about training which ultimately builds their confidence before they utilise the system (Abdinnour-Helm, Lengnick-Hall and Lengnick- Hall, 2003). Page 56 of 68 40 35 38.7% 30 25 32.3% 20 22.6% 15 10 0% 3.2% 5 0 Strongly Disagree Neutral Agree Strongly disagree agree Figure 4.21: It took a long time to import data into the ERP system As per Figure 4.21, 38.7% of the respondents agreed, 32.3% strongly agreed, 22.6% remained neutral, whilst 3.2% disagreed to the statement that it took a long time to import data into the ERP system. Ibrahim (2010) indicates that importing data into the ERP system can take a long time. He adds that

from the implementation phase it **6** **is a very complicated process as it can**

take long time with a lot of planning and consultation, hence data that needs

to be inserted needs to be verified constantly by all departments of the supply chain

process. Hence, EPR can take **6** **months to implement ERP system and years**

to acquire the desired benefits from the system (Mohmed Al-Sabaawi, 2015). 45

40 35 30 25 20 15 10 5 0 0% 3.2% 19.4% 41.9% 29.0% Strongly disagree Disagree Neutral Agree Strongly agree Figure 4.22: Some modules bought were never used in this company Page 57 of 68 According to Figure 4.22, a collective majority of the respondents (70.1%) agreed that some modules bought were never used in this company. A further 19.4% remained neutral and 3.2% disagreed to the above statement. Tsamantatis and Kogetsidis (2006) point out that it is essential for the companies to carefully and strategically select the ERP modules they would need to embed in accordance with their organisational needs, dynamics and processes. Ngai, Law and Wat (2008) highlight that amongst ERP complexity, there are exorbitant high costs involved in its implementation. 50.0 45.0 40.0 35.0 30.0 25.0 20.0 15.0 10.0 5.0 0.0 3.2% 3.2% 9.7% 48.4% 29.0% Strongly disagree Disagree Neutral Agree Strongly agree Figure 4.23: The software interface is not intuitive and very difficult for non-computer literate people to use Figure 4.23 indicate that 48.4% of the respondent agreed with the above statement, 29% strongly agree, 9.7% remained neutral, whilst 3.2% disagreed and strongly disagreed respectively. Jafari et al. (2006) mentions that

ERP systems can be complicated in **6** **that there are three areas that concern the**

contents of training namely **logic and concept of ERP, Features of the ERP**

system software, hands-on training.

Many staff especially those who are older

are resistance to change when it comes to dealing with computers, hence it would be difficult to grasp the three (not just one) areas of concern to ensure the effectiveness and efficiency of the ERP system. Page 58 of 68 45.0 40.0 35.0 30.0 25.0 20.0 15.0 10.0 5.0 0.0 3.2% 12.9% 6.5% 41.9% 29.0% Strongly disagree Disagree Neutral Agree Strongly agree Figure 4.24: Poor level of vendor support Figure 4.24 illustrates

that 41.9% **5 of the respondents** agree with **the statement that there is a**

poor level **of support from** the software providers. A further 29% of the

respondents strongly agreed, 3.2% strongly disagreed, and 12.9% disagreed, whilst 6.5% remained neutral to the above statement. Bhatti (2002) mentions that the project leader should be able to work with all departments to understand their concerns and deal with issues as they arise. This will include if there is poor support from the vendors as indicated by the respondents. 60 50 54.8% 40 30 19.4% 20 9.7% 9.7% 10 0% 0 Strongly Disagree Neutral Agree Strongly disagree agree Figure 4.25: The system does not function to the expectations as promised by the software vendor Figure 4.25 indicates that 54.8% of the respondents agreed, 19.4% strongly agreed, 9.7% disagreed, whilst 9.7% remained neutral to the statement that the system does not function to Page 59 of 68 the expectations as promised by the software vendor. Hoots and Wiley (2015) highlight that users are able to engage in data maintenance activities such as creating, copying, updating, blocking and deleting a master record for financial, material, vendor as well as customers' data. This is indicative that the ERP system can add value to the company. However, vendors must keep to their promise of offering assistance to the users wherever needed in order to gain optimisation of the system. The company should investigate the reasons why the respondents indicated that the system does not function to the expectations as promised by the software

vendor **2 in order to ensure the full benefits of the system.** 40 35 38.7% 30 25

38.7% 20 15 9.7% 6.5% 10 0% 5 0 Strongly Disagree Neutral Agree Strongly disagree agree Figure 4.26: ERP's training programme was long, complex and not very cost effective According to Figure 4.26, 38.7% of the respondents strongly agreed, 38.7% agreed, 9.7% disagreed, whilst 6.5% remained neutral to the statement that the ERP training programme was long, complex and not very cost effective. Yu (2007) maintains that one of the objectives of the ERP system is to be cost effective through an effective training programme that satisfies the end user. However, Schindler and Kragemmergaard (2010) and Ngai, Law and Wat (2008) have found that in their study respondents indicated that the training programme for the EPR system was complex, time consuming and costly. In addition, their studies also found that some of the training was inappropriate, hence became too long. Page 60 of 68 100.0 80.0 100.0% 60.0 40.0 20.0 0.0 0% Strongly agree 0% 0% Agree Neutral Disagree 0% Strongly disagree Figure 4.27: The level of ERP training increased the performance of the users Figure 4.27 illustrates an exceptional indication in that all respondents (100%) agree with the statement. When new systems need to be implemented it is essential that users receive applicable training as they may not be in the same level of understanding with systems developers (Dennis et al., 2006). 45.0 40.0 35.0 41.9% 30.0 25.0 20.0 25.8% 15.0 6.5% 9.7% 9.7% 10.0 5.0 0.0 Strongly Disagree Neutral Agree Strongly disagree agree Figure 4.28: There was a great resistance from employees to the new software Figure 4.28 indicate again that a collective of 67.7% agree with the statement while 9.7% remained neutral, 9.7% disagree whereas 6.5% strongly disagree that statement that there was a great resistance from employees to the new software. Thompson, Strickland and Gamble (2005) argue that organisations could not expect their strategy to be successfully implemented without the support of their most important stakeholders, the employees. It is often emphasised that people resist change due to fear of the unknown, concern over personal Page 61 of 68 loss as well as the fear of replacing labour intensive manufacturing with machines or robots

(Robbins, 2010). In addition, Loh and Koh (2004) highlight that effective communication is necessary between top managers and employees to ensure that there is no resistance in the implementation of the ERP system. 50.0 45.0 40.0 48.4% 35.0 30.0 25.0 20.0 29.0% 15.0 9.7% 10.0 3.2% 3.2% 5.0 0.0 Strongly Disagree Neutral Agree Strongly disagree agree Figure 4.29: Lack of effective project management in the implementation of ERP software Figure 4.29 shows that the majority of respondents (48.4%) agreed, 29% strongly disagreed, 6.5% strongly disagreed, and 3.2% disagreed, whilst 6.5% remained neutral to the statement above. The need for a project manager is a CSF in the successfulness of ERP implementation (ALdayel and Al-Mudimigh, 2011). Project management involves the use of skills and knowledge in coordinating schedules and to monitor activities in order to ensure ERP project objectives are achieved (ALdayel and Al-Mudimigh, 2011). According to Markus and Tanis (2000) the project leader must be involved completely from the chartering phase of the ERP system. However, a project leader must be given clear guidelines order to execute the objectives of ERP at the company. Page 62 of 68 100.0 80.0 60.0 80.6% 40.0 3.2% 0% 12.9% 0% 20.0 0.0 Strongly Agree Neutral Disagree Strongly agree disagree Figure 4.30: Business process re-engineering is practically feasible in a cost effective way Figure 4.30 indicates the findings for the above statement. The findings reveal that 80.6% of the respondents indicate their agreement, 3.2% strongly agree, whilst 12.9% disagree to the statement that business process re-engineering is practically feasible in a cost effective way. Business process re-engineering means changing the fundamental mechanisms in which business enterprise operates (Dennis et al., 2006). It may subject users to new ways of adapting to drastic and rapid changes with an intent to take advantage of new technology (Dennis et al., 2006). This means that BRP process becomes practically feasible and saves cost in the implementation of ERP. Soja (2006) point out that BRP is one of the CSF in the implementation of the ERP system. 80.0 70.0 77.4% 60.0 50.0 40.0 30.0 20.0 9.7% 0.0% 6.5% 3.2% 10.0 0.0 Strongly Agree Neutral Disagree Strongly agree disagree Figure 4.31: Efficacy of hybrid ERP is dependent on key personnel from the IT/Manufacturing systems Page 63 of 68 Figure 4.31 reveals that 77.4% of the respondents agree, 9.7% strongly agree, 6.5% disagree whilst 3.2% strongly disagree to the statement that the efficacy of the brewery's hybrid ERP system depends on the key employees from the IT/Manufacturing Systems department. Somers and Nelson (2004) point out that it is imperative that a company has technological readiness (IT skills and IT infrastructure) for any successful completion of IT projects. If the hybrid ERP system has to be efficient, the company must take cognisance of the fact that there needs to be an increase in their investment in the training of IT / manufacturing key personnel, which ultimately improves the efficiency and responsiveness of operations (Wickramasinghe and Karunasekara, 2012). Page 64 of 68 4.5 Conclusion The findings were presented in this chapter. The findings allow for recommendations to be made on best practice for ERP systems. The findings have answered the research questions and objectives that were formulated for this study. The findings have revealed that although there are many benefits to the implementation of the ERP system at SABMILLER (Prospecton Brewery), there are still challenges that the company needs to address. The next chapter concludes the study with a summary of the findings and recommendations that should be implemented. Page 65 of 68 CHAPTER FIVE CONCLUSION AND RECOMMENDATIONS 5.1 Introduction The aim of this research was to investigate the end-users' perspectives of the efficacy of hybrid ERP at SABMILLER (Prospecton Brewery). The conclusions and recommendations are presented **1 in this chapter.** The recommendations **are** grounded **on the** analysis

of the primary and secondary data collected **for** this **study.**

5.2 Summary of

the Research Findings The findings of this research indicate that the key stakeholders (Table 4.1) have been involved in the decision making of the hybrid ERP system at SABMILLER (Prospecton Brewery). In order to be successful the implementation of ERP must be driven by key stakeholders which in turn increases the company's performance. The majority of the respondents (Figure 4.4) have indicated that hybrid ERP increases integration. The main purpose of the hybrid ERP system is to allow a

company to **3 integrate their business processes and all information**

relevant to their organisation in order to improve their communication and real

time. Since the information of the entire company is kept on one software system the employees from the various locations to simultaneously keep track of orders more easily, coordinate inventory, shipping and manufacturing. As clients become more demanding, companies should increase their capabilities to improve their organisational performance which will ultimately satisfy the needs of the clients. The objectives of this study have been met and the research questions have been answered. Literature has indicated that the implementation of the ERP system has many benefits and challenges as discussed in this study. However, companies should take cognisance of CSFs

2 in order to ensure that **the benefits of the system** are achieved. It is also

critical for all key stakeholders to be involved from the start of the decision to implement ERP as this enables Page 66 of 68 the company to make the right decision in terms of selecting the modules that are necessary to link the entire company.

1 5.4 Recommendations From the findings of this study, the following are

recommended: **5.4.1 Training and** Retraining of Information Technology

Department Personnel **2 In order to ensure the success of the ERP system,** it is

recommended that the IT personnel be trained and retrained. The trained IT employees should in turn have regular training programmes with every end user with the company in order to maintain the success of the system. When employees are trained and retrained, they will have confidence in the system and will not resist the change. 5.4.2 Project Manager One of the CSFs of the ERP system is the need for a project manager. The findings are indicative that there is a project manager (see Figure 4.29). However, it seems that this role is not fully functional. It is therefore recommended that the project manager should be informed by management and the ERP vendors of the importance of his or her role and responsibilities. The project manager should ensure that meetings are held with the various departments at least once a week to find out their concerns (if any) and filter this to the vendors. This will assist in ensuring that the hybrid ERP system operates at its optimal level. 5.4.3 Vendor Support The majority of the respondents have indicated that vendor support is poor and that the expectations as promised by the software vendor is not in line. It is recommended that the project manager should have focus group interview with end users in order to find out what type of support is preferred from the vendors. Thereafter the service level agreement should be revisit and reworked according to the missing level of support and expectation as indicated by the staff. Page 67 of 68 5.5 Areas for Further Research There is limited research that has been conducted on companies that utilise ERP systems. It is therefore recommended that more studies should be conducted in this area. It is also recommended that interviews be carried out with the target population to determine if the implementation of hybrid ERP has enabled the efficiency of the company. 5.6 Summary An overview of the entire study was presented in this chapter. Agility in keeping up the pace with dynamically ever changing technological developments and environment is paramount for every organisation. It was established that it is imperative for organisations to ensure that employees are considered as an integral part of their strategy in the ERP implementation. The recommendations presented are practical and can be easily implemented. This chapter concludes this study. Page 68 of 68

