

**INSTITUTIONAL FACTORS INFLUENCING ADOPTION OF ENTERPRISE  
RESOURCE PLANNING SOFTWARE IN THE SUGAR INDUSTRY IN KENYA: A  
CASE OF NZOIA SUGAR COMPANY**

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## DECLARATION

This research project is my original work and has not been presented for the award of any degree in any other university.

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## **DEDICATION**

I dedicate this research report to my mother, Madam Emily Barasa who has always believed in me, my father Mr. Johnston Barasa who has encouraged me to reach for the stars and my siblings Mumjay, Jani, Bunky, Ankobro, Essy, Bil and Nangi all who have been a strong pillar of support.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

**BPM** - Business Process Management

**BPR** - Business Process Reengineering

**CDMA** - Code Division Multi-Access

**EDI** - Electronic Data Interchange

**ERM** - Enterprise Resource Management

**ERP** - Enterprise Resource Planning

**GSM** - Global System for Mobile communications

**GUI** - Graphical User Interface

**ICTs** - Information and Communication Technologies

**IT** - Information Technology

**IS** – Information System

**MRP** – Materials Requirements Planning

**MRP II** – Manufacturing Resource Planning

**NSC** – Nzoia Sugar Company

**OS** - Operating Systems

**SAP** – Systems, Applications & Products in data processing

**SOPs** – Same Operating Procedures

**TQM** - Total Quality Management

## ABSTRACT

Enterprise Resource Planning (ERP) systems have become common in large companies and government corporations mainly in developed countries. Over the past three decades, organizations worldwide facing pressure from changing business environments have adopted sophisticated, off-shelf information technology applications rather than build their own information technology systems in-house. While there is wide adoption of ERP systems in Western economies, developing countries lag far behind. Adoption of the ERP systems within organizations plays critical role in finance functions, human resource functions, supply chain management functions and project management functions of organization because it provides a platform for enhance deficiency and effectiveness in organization's productivity. This study sought to establish the institutional factors influencing adoption of Enterprise Resource Planning software in the sugar industry. The study was guided by the following objectives: To assess the influence of quality control, labour allocation, facility layout and information system on the adoption of ERP software. Descriptive research design was used for the study. The target population consisted of 142 participants selected through census sampling. Questionnaires were used as instruments for data collection. Data was analyzed through the use of a computer software SPSS. The study established that quality control through re-alignment of work processes, product standardization and strategic direction influenced the adoption of ERP in Nzoia Sugar Company; it was also revealed that labour allocation through employee set of business skills, quality labour and management leadership and facility layout and information systems enabled the ERP adoption. The study recommends that the top management of Nzoia Sugar Company Limited and other Corporations in Kenya should ensure that their ERP systems are dynamic allowing adoption of new business models. The top management team of Nzoia Sugar Limited should actively participate in ERP adoption process. All state corporations in Kenya should put in place high speed internet connectivity in their organizations to effectively enhance adoption of ERP. The ICT department of Nzoia Sugar Limited and all other organizations operating in Kenya should ensure that their ERP systems are custom-made, making them user friendly.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Enterprise Resource Planning (ERP) is simply an integrated system that is computer-based used by many companies for managing their resources both internal and external ones such as human resources, financial resources, materials and tangible assets of the firm. According to Mutongwa and Rabah (2013) ERP is a technology used to unify all business functions by integrating its processes and also enable information flow. The technological system has a central database which uses a unit computing program, thus consolidating all business operations across the entire system (Velcu, 2010).

According to Esteves (2014), some of the notable benefits of ERP include improving the business working capital using total quality management culture, raw material optimal usage, reducing inventory levels in all processes and selling and delivering products to customers in a timely manner. In addition, ERP enables the managers to get real-time information on all activities of the firm such as operational cost increases, redundancies and inaccurate data and any other business inefficiencies (Molla & Bhalla, 2006).

Barton (2001) states that Enterprise Resource Planning is a term originally coined in 1990 by The Gartner Group even though its roots date back to the 1960s and as such, the term referred to management of inventory in the manufacturing sector only. But in the 1970s the term revolved and included material requirement planning (MRP) used for scheduling the production

processes; but later MRP – II was developed and included many other manufacturing sector (Haddara & Zach, 2012).

In 1972, Germany developed the Systems Applications and Products (SAP) which was used in data processing and helped develop business software that worked in real time. And by 1975, MRP software was running in 700 companies in the US and Europe that could afford the expensive software since it also worked on mainframe computers that used a lot of computing power. During the 1990s, the system had expanded to cover many operational processes aside from inventories to include HR and accounting, as iridescence for ERP. During this period, a company called PeopleSoft that dealt with human resource management system (HRMS) set offices in Canada causing its spread across to Europe, Asia, Americas, Pacific and Africa (Beheshti, et al., 2014). For a very long time, it was anticipated that ERP would have a big impact to the business world and since 2012, ERP has become the biggest system used in the software market making close to 24.9 Billion dollars (Pang, et al., 2014). Organizations are using ERP system since it has the ability to enhance business process management (Al-Mashari, et al. 2003).

SAP, Oracle and PeopleSoft are some of the best in ERP software developing companies (Davenport, 2010). For effective usage of ERP, the software should be handled as a way of life as opposed to it being a project. The ERP may also take several months before it is fully implemented within the operations of an organization, since it requires a lot of planning and consulting with experts in that field. Other companies including JD Edwards and Baan also started making the software by the mid-1990s in addressing the key functionalities of a company.

As such many companies and especially in Europe chose to update their systems, as the Y2K computer bug was imminent with introduction of the Euro (Beheshti, et al., 2014).

Globalization, privatization and liberalization led to the introduction of IT and communication that changed the face of the business world as well as trade on the African continent from the early to mid-1990s. According to El Sawah (2008) Egyptian organizations saw the value of using such software within their business operations so as to gain a competitive advantage in the market. In the late 90s an ERP system, was integrated from the multinationals to the local companies (El Sawah, 2008). One of the main challenges that the Egyptian business faced was the conflicting cultures and inability to realise the benefits expected from the ERP system after its implementation into the firms. Some other failures were delay in project implementation, cancellation of projects, cost over-runs and issue with scheduling (Abdellatif, 2014).

In Nigeria, Delta State, the state was the first among the 36 states to incorporate ERP system with an effort of centralising the payment processes. With its successful implementation, the people of Delta enjoyed improved government operations, processes and service delivery. This led other government ministries and departments to incorporate and implement the ERP system within its operations. Flexibility, standardized operations, driving business reengineering are some of the factors that motivated the government to implement ERP systems (Maguire, Ojiako & Said, 2010).

ERP system implementation spread across the continent and Kenya was not left behind. According to Otieno (2010) a number of companies adopted ERP system including Kenya Power and Lighting Company (KPLC) which implemented the SAP R/3 system in 1997, Kenya Ports Authority, Telkom Kenya Limited and Kenya Pipeline Corporation embarked on ERP

implementation. Some of the common sectors that have implemented ERP are those in the manufacturing, power, petroleum and transport sectors. Nzoia Sugar Company being one of them.

## **1.2 Statement of the Problem**

Nzoia Sugar Company has had various systems used in their daily work processes such as SysPro, E-Biz frame and Pay-man. Being a large organization with various departments, none of the said systems singly served the entire organization. Pay-man was used as a payment platform for employees but not farmers. SysPro could pay farmers but not employees or suppliers. At any given time, two system were run and this meant that there was no integration of data and information. Data had to be manually transferred leading to duplication of jobs, loss of documents or alteration of information. A lot of time and human resources were also used.

Enterprise Resource Planning (ERP) software was adopted to take care of all the processes such as field data collection, smart cane weighing systems that are operator-less, and document management systems processing of documents and workflows.

It is against this background that the goal of this study aimed to assess institutional factors influencing adoption of enterprise resource planning software in Nzoia Sugar Company Limited.

## **1.3 Purpose of the Study**

The purpose of the study was to investigate the institutional factors influencing adoption of Enterprise Resource Planning (ERP) software in the sugar industry in Nzoia Sugar Company.



## **1.4 Objectives of the Study**

The study was guided by the following specific objectives;

1. To assess how quality control influence adoption of Enterprise Resource Planning Software by Nzoia Sugar Company Limited of Bungoma County.
2. To determine the extent to which labour allocation influence adoption of Enterprise Resource Planning Software by Nzoia Sugar Company Limited of Bungoma County.
3. To examine the extent to which facility layout influence adoption of Enterprise Resource Planning Software by Nzoia Sugar Company Limited of Bungoma County.
4. To assess how information system influence adoption of Enterprise Resource Planning Software by Nzoia Sugar Company Limited of Bungoma County.

## **1.5 Research Questions**

The study was guided by the following specific objectives;

1. How does quality control influence adoption of Enterprise Resource Planning Software by Nzoia Sugar Company Limited of Bungoma County?
2. What is the extent to which labour allocation influence adoption of Enterprise Resource Planning Software by Nzoia Sugar Company Limited of Bungoma County?
3. To what extent does facility layout influence adoption of Enterprise Resource Planning Software by Nzoia Sugar Company Limited of Bungoma County?
4. How does information system influence adoption of Enterprise Resource Planning Software by Nzoia Sugar Company Limited of Bungoma County?

## **1.6 Significance of the Study**

The findings and recommendations of this study would be important to sugar companies since they will be able to come up with more effective measures of adopting the improvements on the ERP. This study will also guide policy makers and practitioners in coming up with policies and strategies that will help in the adoption of ERP. Lastly, the study will be used a reference material to guide future researchers and scholars on areas to conduct future studies.

## **1.7 Scope of the Study**

The scope of the study was to assess the institutional factors influencing adoption of Enterprise Resource Planning (ERP) in the sugar industry. The research data was collected from the management staff of Nzoia Sugar Company Limited of Bungoma County which was used as the case study.

## **1.8 Assumptions of the Study**

The study assumed that the sugar companies in Kenya are adopting or are considering adopting Enterprise Resource Planning software systems in their organizations. It further assumed that data given by the respondents was correct and accurate for this study. The study also assumed that the respondents truthfully, freely and willingly gave the required information and also had sufficient knowledge to answer the questionnaire correctly. In sampling, the assumption was made that the sample had the same characteristics as the population, and therefore represented the entire population.

## **1.9 Limitations of the Study**

The research was affected by financial constraints to be used in stationery; this was mitigated by early savings of funds for the same. The managers were busy people and did not have time for research. Further, other managers work outside the company, in the nucleus estate and in outreach offices. This was mitigated by seeking early appointments with the clients. The researcher made plans to talk with the respondents during their off-times, while exercising patience while acquiring the data. The researcher was also challenged while seeking information on ERP adoption in the sugar sector, but sought information from online journals.

## **1.10 Delimitations of the Study**

This research focused mainly on institutional factors influencing adoption of Enterprise Resource Planning (ERP) in the sugar industry in Kenya. The geographical dispersion of the sugar companies in Kenya could have posed a challenge and thus the study delimited its findings to Bungoma County, located in the western region of Kenya. This was moderated by the fact that all other government owned sugar companies outside the western region apply the same operating procedures (SOPs) in terms of their operations, and thus generality and inference would not be lost by narrowing it to Nzoia Sugar Company which in effect led to ease of data collection, correlation analysis and inference.

## **1.11 Definition of Significant Terms**

**Adoption of ERP:** actions in preparation for, and adaptation to the requirements of implementing ERP.

**Enterprise Resource Management (ERM) System:** a system that is computer-based used for resources management both internal and external including financial and human resources. The

system here refers to the hardware, software and communication network interconnecting the computers.

**ERP System:** it is a packaged software and application adopted in organizations for integrating data and information technology to ease operational chains.

**Information Systems:** a collection of subsystems handling different functions in support of the decision making process and ease control of a firms' activities.

**Quality Control:** is the set standard in handling techniques used in operations and activities to ensure quality of products is met.

**Labour Allocation:** refers to assigning duties to employees or apportioning tasks to laborers based on their skills and areas of specialization.

**Facility Layout:** the physical arrangement and placement of work groups, sections, departments, machines and raw materials within the working area.

### **1.12 Organization of the Study**

This study is organized into chapters. Chapter one (introduction) includes; background of the study, the statement of the problem, the purpose of the study, the research objectives, research questions, significance of the study, limitation and delimitations of the study and definitions of significant terms. Chapter two (literature review) includes; quality control, labour allocation, facility layout and information system, theoretical framework, conceptual framework and knowledge gap. Chapter three (research methodology) includes; research design, sample size and sampling procedures, data collection instruments, data collection procedure, piloting instruments,

data analysis techniques, ethical considerations and operational definition of variables. Chapter four contains data analysis, presentation and interpretation of the findings while chapter five; summary of findings, discussion, conclusions and recommendations

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter contains discussions from related literature on how quality control, labour allocation, facility layout and information system influence the adoption ERP software. A theory that expound on the ERP adoption and its influencing factors has also been discussed. There is also in this chapter a conceptual framework that shows all variables and their indicators in the study objectives. Finally, the chapter contains a summary of literature and the knowledge gap.

#### **2.2 Concept of Enterprise Resource Planning (ERP) in Organizations**

An Enterprise Resource Planning system uses accounting information to source, process and distribute information across all departments within an organization in a seamless computing process (Motwani, et al 2005). ERP systems address the need for integration of a large organization with the use of computer systems, such that information is shared in real-time to all team members whenever they need. ERP uses common databases that integrate and share information throughout the entire enterprise (Olhager, et al, 2003).

The expectation is that ERP systems should provide seamless integration of processes in all functional units with an aim of improving workflow, standardize business practices, account for inventories and an easier and quick supply chain management unit (Mabert, et al, 2000). In making informed and accurate strategic decisions, ERP is recommended since it provides accurate and critical information to the users. Advancement in information technology and demand for efficient supply chain management units call for organizational-wide integration

hence the need for ERP system adoption. In the world of high business competitiveness and the well informed and demanding customers, ERP system becomes a ‘must have’ system in all organizations. Currently, more than 60% of organizations have already installed ERP packages and incorporated it within its operations (Hsiuju Rebecca Yen, Chewn Sheu, 2003).

For these 60% plus organizations, the benefits accrued from ERP systems adoption include flexibility in generation of information, high quality of reports, integration and high accountability of organizational resources, timely and reliable data that enhance decision-making process in the firm. Furthermore, ERP system implementation is expected to yield high company performance (Charalambos Spathis, et al, 2005). With such benefits, it is important to assess the actual benefits of ERP adoption which laid the basis for the current study.

### **2.3 Quality Control and Adoption of Enterprise Resource Planning Software**

Quality control in technology involves detecting and removing any defects (Sams & Sams, 2014). Testing the software and doing verification will improve its capability and requirements, this is according to Emeka-Nwokeji (2012).

According to Emad and Ibrahim M. (2012), maintaining high quality in the organization leads to increased revenue, reduced costs and improved productivity. Quality can be enhanced by efficient collection of data and subsequent management which will be able to detect errors and inform the necessary people to correct the error. Proper data management also traces areas of vulnerability by conducting frequent audits, the budgets and finances are accounted for and aligned to the financial statements (Emad Kh. & Ibrahim, 2012).

Integration and interlinking all organizational units would result in high total quality management (TQM). Adoption of TQM would eventually result in solving all production and quality problems faced by any organization (Morris & Venkatesh, 2010). In totality, TQM covers top management commitment, the leadership styles adopted, team work, training and development structures, recognition and rewarding employees and the teams that perform well. These elements lead to transformation and change at the organizational level (Kallunki, Laitinen, & Silvola, 2011).

According to Ram, et al. (2013) quality control is all about the four main change principles including, the work processes handled at the overall organizational level, variability available to the entire organization, analysis to check for areas of weaknesses and effort towards continuous improvement (Elragal & Al-Serafi, 2011). In the past, quality control was done after the production process was completed, in an effort to check for defections and errors, but with transformations and advancements, quality control is done at the beginning of the production process so as to prevent errors and defects in the manufacturing process. The management team is able to identify challenges and prevent/avoid them before the actual production process commences, this action yields higher benefits that are critical in quality management implementation in the manufacturing sector (Emeka-Nwokeji, 2012).

Martisons and Hempel, (2011) and Emeka-Nwokeji, (2012) considered the Australian manufacturing organizations and noted that strategic direction with the leadership having clear and uniformed direction improves the work flow and the quality of produced units. The leaders must understand the customer's expectation in terms of the product and its quality and share this information with all manufacturing units so as to realize high quality performance and meet



customer needs. Quality control teams include a sponsor mainly from the top management section of the organization, who leads a steering committee which plans, leads and directs the implementation phase, and do a follow-up to monitor the progress. It is of value to invite the lower management teams so as to increase efficiency through employee participation and also create linkages throughout the organizational system. Installation of ISO 9000 and other external systems also enhances TQM implementation. This study therefore sought to determine whether quality control influences the adoption of ERP systems in Nzoia Sugar Company Limited of Bungoma County.

#### **2.4 Labour Allocation and Adoption of Enterprise Resource Planning Software**

Integrating projects through reengineering though complex, leads to improved enterprise performance (Hawa, 2012). According to researchers May and Kettelhut (2006), Sumner (2000), Welti (2009) and Holland et al (2009) labour allocation is one of the critical success factors when in the process of ERP project adoption. It is thus important to understand the complexities exhibited by the different labour force in any organization such as skills they possess, and knowledge and expertise they hold (Skok & Legge, 2012). In any case the people with the right skill set are an assurance of successful project implementation (Wateridge, 2007). Any improvement is solely based on the human resources with a focus on their human competencies and capabilities to positively influence the outcome (Hawa et al., 2012).

According to Somers and Nelson (2004) ERP adoption success is fully dependent on the quality of the labour force, as the management team must make plans and schedules to have the well qualified people incorporated in the adoption and implementation stages. The labour allocation also involves leaders who have skills such as clear vision, people skills, good communicators and

people who are able to motivate the team (Stewart et al, 2010). The leaders must culture and enhance cooperation amongst the teams for ease in adoption of the ERP system.

Nah et al. (2013) shows that there is value in the management offering sufficient training so as to increase the chances of success in ERP system adoption across the organization. The training should not be only in gaining IT skills but include strategic management so as to shift the attitude and perception of employees, as such increase the chances of accepting new advanced technologies (Bradley, 2008). In any case ERP adoption is sure to fail, if the implementation is done by teams lacking any or sufficient training (Somers & Nelson, 2004). It is also prudent for the management team to allow all employees to interact with the ERP system (Ahmad, et al., 2015). The more the employees interact with the ERP system the easier its usage becomes as they gain a more hands-on experience. In any case, training and high commitment levels by the top leadership of an organization improve probability of its adoption (Laukkanen et. al. 2007).

The top leadership must show their commitment to the project by realigning the strategic business goals with ERP adoption. They must communicate their vision to all employees and resolve any conflicts of both the internal and external parties (Finney & Corbett, 2007; Zhang et al., 2005). The leadership role is deemed critical in the success of the ERP project adoption in any organization. Ngai, et al. (2008) noted that top leadership skills and their support is an important element in ERP adoption and its intended success. The leaders must give the ERP project support throughout from the first to the last stage (Al-Mashari et al., 2003). Support can be in terms of resource search and availing and providing direction and sound decision making (Umble et al., 2003).

Studies done evidence the value of top management leadership as critical in the adoption process of ERP in organizations (Bradford & Florin, 2003). Willcocks and Sykes (2000) shared that the championship, participation and support enable success in ERP adoption. In addition, their publicity and financial and non-financial support aides in ERP adoption (Somers & Nelson, 2004).

## **2.5 Facility Layout and Adoption of Enterprise Resource Planning Software**

It is simply the arrangement of equipment, materials, and people in an organized manner either as per workstations, storage areas, department or units (McKendall and Hakobyan 2013). The organizational facility layout affects the quality of manufactured products, level of productivity of teams and overall competitiveness of the firm. The layout tells how fast the employees can work and produce more within a specified time, these also affect the productivity and ease in response to changes such as automation and updating of systems (Khattak, et al. 2012).

According to Hasibuan and Dantes (2012) any organization keen on improved performance must concentrate on parameters while laying out the facility by considering processes and people who will work in a specific unit. In addition, layout of the facility says a lot about how fast the work flows by removing obstacles that may deter and delay flow of operations (Tarhini, Ammar & Tarhini, 2015). Hakobyan and McKendall (2013) show that shorter connecting work spaces reduces material handling costs hence enhances work flow.

ERP system once adopted increases work flows since all computer systems within the organization will be integrated and linked hence reducing movement within the workplace and as such increase production flows leading to competitiveness and improved product quality (Kallunki, *et al.*, 2011). Optimal facility layout of manpower, machines, equipment and materials means that these elements

are found in specific fixed places and avoids time wastage. The ERP system is then used to share this information to all teams across the entire organization. In the views of McKendall and Hakobyan (2010), they noted that all facility layout decisions should have efficiency of operations as its long-term agenda. This is also associated with costs, operational processes and capacity.

A successful ERP adoption relies on many stakeholders but the involvement of ERP vendors in project management is critical. Ara and Al-Mudimigh (2011) define project management as the application of knowledge, techniques and skills to an ongoing project to meet its requirements. Sumner (1999) suggests that the project management team should always include the ERP vendors in order to have technical skills to ease in its implementation. In many organizations adopting ERP, the project managers have been mainly internally drawn with no incorporation of the ERP vendors. Yet it is the vendors who offer technical support about the system. This factor, when overlooked in the constitution of a project management team was shown to have a high correlation for failure (Al-Mudimigh et al., 2000). He further recommended the incorporation of ERP vendors into the project management team to achieve the balance between the internal and external project team members.

In a study by Somers and Nelson (1999) they emphasized on the skills, abilities and experience of the project managers. In a project as pervasive as an ERP project, they urged on the importance of having vendors who are both skilled in the software capabilities and dealing with people to be part of the project managers. This finding is reiterated by Al-Mashari., (2003) who found that the vendors should not only be skilled in the software capabilities but should also have the ability to communicate clearly with stakeholders, engage people and operate with styles that build trust. ERP adoption is about people and having a strong project management team is a key ingredient for its success.

In the Kenyan context Otieno (2010) found that there was a general lack of project management skills especially when adopting massive information technology projects like ERP. The reason for this disconnect, he insists is caused by the failure of many managers to understand that this project is as much a people's project as it is an information technology project. Markus et al. (2003) goes further to add that in many instances the project committee is not inclusive of the ERP vendors and consultants. The consequence of this finding is further elaborated by Umble et al., (2003) who argues that ERP vendors are very critical in the adoption of ERP projects because in many instances they make up for the clear lack of people skills among the top management.

## **2.6 Information System and Adoption of Enterprise Resource Planning Software**

This research adopts an explanation of an information system that supports the basic concepts of what constitutes an ERP system. In the view of Nzuki and Okelo-Odongo, (2015) noting that information system (IS) includes collection of subsystems handling different functions that support decision making and the organizational control.

Matende and Ogao (2013) highlight that IT based systems are used in capturing, transmitting and storing information which can be retrieved for later usage by manipulation. Information System provides any organization with useful data on vendors, customers; products and processes that enable it operate in an effective manner (Avison and Fitzgerald, 2016). According to Chang and King (2015) IS can be viewed as the hardware, software, human expertise and management processes that enable an organization to maximize its returns. It equally is a combination of the software, hardware, data and networks (O'Brien, 2014).

Global developments of IS have made it a necessary tool in operations and management of organizations (Morris & Venkatesh, 2010). The important element is that the application,

systems and networks that are interlinked enhance communication within the organization (Idris, 2014). Similarly, Esteves (2014) noted the great importance in IS integration to lead in competitiveness. According to Shahzad *et al.*, (2016) Enterprise Resource Planning (ERP) system is deduced as a solution to the problem of managing large amounts of data on the customers, the markets and developments.

There are several definitions used in IS field which is wide (Candra, 2012) but Morris & Venkatesh, (2010) on the other hand found out that any ERP system must be able to integrate all information within an organization and its many operational units. According to Muinde (2016) information technology and information systems are paramount in the current business world. This is due to the fact that many of these business enterprises rely on computer systems and technological software to provide them with accurate data that enables sound decision making (Shahzad, Jen & Yuen, 2016). One of the easiest ways is through installation of Enterprise Resource Planning (ERP) systems as it simplifies manufacturing processes by availing real-time information for decision making process and internal control measures (Idris, 2014).

## **2.7 Theoretical Framework**

This study was anchored on two theories which have been widely used when ERP adoption is being studied. There are many theories that support the context of ERP adoption but this research will focus on these two theories: Theory of constraints (TOC) and Theory of change management.

### **2.7.1 Theory of Constraints**

This theory was developed by Eliyahu Goldratt to help people and organizations discover their problems, create solutions and successfully implement those solutions for high performance of an organization (Laukannen et al., 2007).

It then encompasses a systematic approach to organizational problems by showing how to identify constraints and achieve set goals. Today, TOC method covers three main angles the operational strategic tools, thinking process tools and performance measurement systems (Cox & Spencer, 1997).

Identification of the constraint calls for a thorough examination of all processes in order to find the system's constraints. Once the constraint is identified, TOC recommends observing how the constraint is slowing down the business processes. Once the constraint has been observed and found potentially lethal to the whole business, the offending constraint is removed from the whole business process (Ioannou, 2004). In ERP adoption, the approach of TOC focuses solely on bottlenecks in the organization which are then brought up as a solution in solving the bottlenecks. The weakest link that is constraining the system is focused on and then eliminated to offer overall improvement during ERP adoption (Ioannou, 2004).

The theory is therefore based on the hypothesis that ERP adoption is a solution to a problem an organization might be facing. This can be explained by the fact that an ERP vendor assesses the organization intending to adopt ERP by conducting a thorough analysis of the company's value chain. This assessment helps the ERP vendor to identify redundancies that can be eliminated by adopting ERP and business functions that will in turn improve due to ERP. The vendor is then

tasked with explaining to the management how the ERP software will be a strategic solution to the company's problems.

In this study, the TOC is envisaged to bring into understanding that in adoption of ERP systems, project teams must make correct decisions that will enable the organization to meet the set objectives and targets in the most efficient way and avoid wasting time on the constraints. Despite the existence of constraints, shareholders will still expect the results within the triple constraints.

This has also supported by many researchers, who posit that ERP is adopted in organizations because of a problem/problems that can only be solved by an integrated software (Zhenyu et al., 2001; Bingi et al., 1999; Cummings & Worley, 2005).

### **2.7.2 Theory of Change Management**

The Theory of change management is a comprehensive and structured approach for transitioning organizations from the present state to an expected state with the intention of business benefits (Cummings & Worley, 2005). Organizations today are rapidly changing, motivated by either external or internal pressures. All change, whether internally or externally motivated involves adopting new processes, mind sets and behaviour.

The adoption of ERP systems is a very complex and costly process that requires a lot of change. Davenport (2011) describes adopting ERP systems as the largest business change. ERP introduces organizational-wide change which often leads to resistance, errors and confusion (Somers & Nelson, 2003). Research has proven that effective change management is critical to successful adoption of new software. Cummings & Worley, (2005) found that unlike in any other



information systems, the problems that plagued ERP adoption were not technologically related issues but mostly organizational based and human related issues like commitment and culture.

While adopting ERP projects, the changes in the businesses processes must be accompanied by structural and managerial system change in the organization (Davenport (2011)). The effectiveness of such changes will minimize resistance of the new ERP project by the users. Failure to have an adequate organizational change management attitude will sabotage the entire ERP initiative.

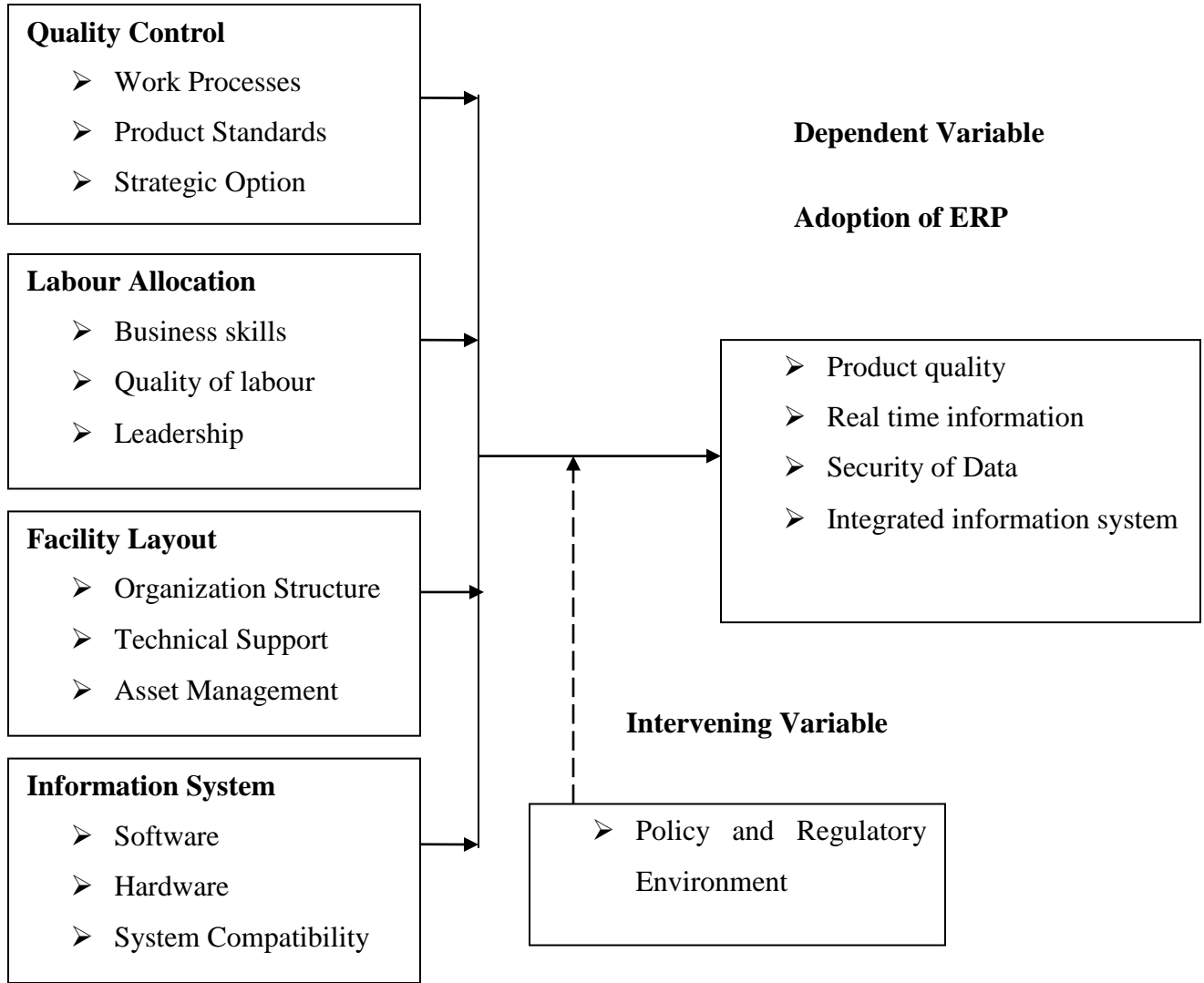
Change is inevitable and it can be harrowing, pervasive or exciting depending on how it is handled (Al-Mashari et al., 2001). Adopting an ERP project without proper change management can affect the morale of your employees and have a cascading effect on their performance, productivity and bottom line.

## **2.8 Conceptual framework**

The researcher developed a conceptual framework in a diagram form to show the direction of the study indicators and variables. According to Kothari (2004) a conceptual framework is a diagram that represents key ideas of the study and gives it a structure. The researcher equally used the framework to showcase the relationships of the different study constructs. This study was guided by the following conceptual framework.

**Independent Variable**

**Institutional Factors**



*Figure 2.1: Conceptual Framework; Source, Researcher 2018*

## **2.9 Summary of Literature Review**

The chapter looks at the institutional factors influencing adoption of Enterprise Resource Planning software in sugar industries such as quality control, labour allocation, facility layout and information system. The chapter also focuses on a theoretical framework that relates to the topic and a conceptual framework shown in a diagram.

## **2.10 Knowledge Gap**

Very little research has been done on adoption of ERP in developing countries and their experiences in general for instance Shahzad *et al.*, (2016) in Malaysia; and Al-Nassar *et al.*, (2016) and Shah *et al.*, (2011) in Jordan. Studies in Kenya such as in 2015 Nzuki and Okelo-Odongo looked at ERP adoption in manufacturing firms in Nairobi Kenya and Matende and Ogao (2013) focused on ERP system implementation from the users' participation. In the recent past, academic scholars have researched on the importance and implementation of ERP in telecommunication companies, however, the same research has not been done in respect to sugar companies. None of the known local studies is known to have researched on the institutional factors influencing the adoption of ERP in sugar companies in Kenya and more specifically Nzoia Sugar Company Limited of Bungoma County. It is in this light that the researcher aimed at filling the existing academic gap through carrying out a survey on the institutional factors influencing the adoption of ERP in Nzoia Sugar Company.

Apart from the literature reviewed, other studies have been conducted on ERP that are in one way or another similar to my study. Allen and Kern (2001) on ERP implementation in Singapore discovered misalignment of data format and procedures and the legal requirements for its adoption. The study noted that ERP adoption in one country or region maybe successful while in

another it is a complete failure. However, this study sought to establish institutional factors affecting the adoption of ERP in the sugar industry, hence, the knowledge gap.

Further, Srivastava and Gips, (2009) in their study found that lack of leadership where managers concentrated on their needs and not those of their teams and department and since this was an IT-related project, the IT team and department took the leading role failing to involve other project team members. This study is different from my study, which highlights institutional factors the influencing the adoption of ERP in hence the knowledge gap.

Bradley & Lee (2007) in their study on ERP found that a good training is essential for any ERP adoption whether it's in a company or even in a school. They also added that the more employees are satisfied from the training they had, the more usefulness they will display. This study is slightly different from my study, which highlights the influence of quality labour on the adoption of ERP hence the knowledge gap.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

Chapter three presents the methodology that the researcher will use in the study. It also highlights the research design, target population and sampling methods used to obtain the study's sample size. It has sections on the research instruments used in data collection, and how testing was done to ensure valid and reliable data is collected. It showed how data was collected, analyzed and its presentation. The chapter also covered the ethical considerations that must be adopted and had a table on the operational definition of terms.

#### **3.2 Research Design**

A research design is a representation of the main strategy the study uses so as to respond to the study questions and objective. According to Yin (2013) a research design is the structure that a researcher uses in conducting the study. The structure should have an order and well designed.

This study used a descriptive research design in collecting data to establish the institutional factors influencing the adoption of ERP systems. It also obtained information which would describe the existing situation by seeking the perception, attitudes, values and behaviors of respondents (Mugenda & Mugenda, 2003). Descriptive research design gives a clear picture of situations as they naturally occur (Burns & Grove, 2003).

Descriptive research designs help provide answers to the questions of who (human resources, including management, workers and vendors), what (the ERP system), when (during the

adoption), where (at Nzoia Sugar Company), and how (adoption process) it relates to the research problem while providing answers to the question ‘why?’

### **3.3 Target population**

According to Maxwell (2012), a target population is a large population of interest to the researcher from which the sample respondents was drawn. The target population comprised of managers in the organization: 12 top level managers, 24 middle level managers, 106 low level managers (Supervisory staff), totaling to 142 participants.

### **3.4 Sampling Procedure and Sample Size**

This part shows the procedure that was followed in getting the sample size for this study. In essence, a sample is derived from the entire target population while sampling is the process of selecting that smaller group of respondents from the entire target population in such a manner that the sample is a representation of the population (Mugenda & Mugenda, 2003). According to Yin (2013), for the results of a survey to be plausible, a representative sample should be selected from the accessible population.

Since the target population was small, at 142 staff of Nzoia Sugar Company, then this study adopted a census sampling procedure, where all the elements of interest were included in the respondent list. According to Mugenda and Mugenda (2003) a census can be adopted when the population comprises of 200 or less items and are easily accessible to participate in the study.

### **3.5 Research Instruments**

The main data collection tool which was used was the questionnaire its selection was based on the type of data that was collected. Primary data was collected on ERP adoption. The questionnaire was structured and contained closed-ended questions covering the four study objectives and had also a section on the background information of the respondents.

The questionnaire was chosen as it is cheaper in collecting research data. Its information was also easy to analyze as the data collected was uniform.

### **3.6 Piloting of instruments**

A minor study called pilot study was conducted to standardize the instruments before the instruments are used for actual data collection. This was carried out at Mumias Sugar Company.

#### **3.6.1 Validity of the Instrument**

This is the level to which the results are based on the study, and as such that all the collected and obtained results from study analysis is a representation of items under study. The researcher gave the instruments to the supervisor to scrutinize if the instruments were valid. Necessary changes were made on the questionnaire before the final study was conducted.

#### **3.6.2 Reliability of the Instrument**

It is a measure to which any instrument used in research gives similar and consistent results is realized every other time with repeated trials. Through the influence of random error as it increases then the reliability decreases and vice versa is true. The random error is simple a

deviation from true measurement of other factors not fully noted by the researcher (Mugenda & Mugenda, 2003).

The researcher conducted a pilot study to test for reliability while using the test-retest method by administering the same test to the same group at two different intervals. The second test was administered after two weeks.

### **3.7 Data Collection Procedure**

The researcher adopted a ‘drop and pick later’ method of data collection. This method allowed the busy staff of Nzoia Sugar Company sufficient time to fill the questionnaire, before collection and analysis.

The researcher allowed the respondents one week’s time to fill the questionnaire, before collecting them and embarking on analysis. While dropping the questionnaires, contact information of the respondents was obtained so as to respond to any queries that they had.

### **3.8 Data Analysis**

Data analysis is the process of carefully examining data collected so as to make meaningful inferences and conclusions (Creswell & Poth 2017). It also comprises of the process of editing, coding and tabulation of the collected data into meaningful information (Yin, 2013).

After cleaning the data, it was entered in the Statistical Package for Social Science (SPSS) version 22.0 for further analysis. Descriptive analysis was computed thus; measures of central tendencies including means, standard deviation and percentages. Tables were used in the presentation of the study results for visual display.



### **3.9 Ethical Consideration**

The study required the researcher to observe utmost confidentiality by safeguarding information from the study. All the respondents were assured of confidentiality of the information they will provide including their own personal information. Any personal information including names that would identify the respondents was not asked and excluded from the final report.

Additionally, permission was sought from the respondents before commencement of the study, where the purpose of the study was explained as for academic purpose. Participation in the study was on voluntary basis.

### **3.10 Operational Definition of Variables**

The independent and dependent variables were the only two variables considered in this study. The independent variables in the study are: quality control, labour allocation, facility layout and information system. The dependent variable was adoption of ERP by Nzoia Sugar Company.

**Table 3.1 Operational Definition of Variables**

| <b>Objective</b>  | <b>Variable Type</b>              | <b>Indicators</b>  | <b>Measure Scale</b>               | <b>Analysis Technique</b>      |
|---|-----------------------------------|--|------------------------------------|--------------------------------|
| To assess how quality control influence adoption of ERP in Nzoia Sugar Company                      | Independent<br>Quality Control    | <ul style="list-style-type: none"> <li>➤ Work Processes</li> <li>➤ Product Standards</li> <li>➤ Strategic Direction</li> </ul>     | Nominal scale<br><br>Ordinal scale | Frequencies<br><br>Percentages |
| To determine the extent to which labour allocation influence adoption of ERP in Nzoia Sugar Company | Independent<br>Labour allocation  | <ul style="list-style-type: none"> <li>➤ Business skills</li> <li>➤ Quality of labour</li> <li>➤ Leadership commitment</li> </ul>  | Nominal scale<br><br>Ordinal scale | Frequencies<br><br>Percentages |
| To examine the extent to which facility layout influence adoption of ERP in Nzoia Sugar Company     | Independent<br>Facility Layout    | <ul style="list-style-type: none"> <li>➤ Organization structure</li> <li>➤ Supplier support</li> <li>➤ Asset management</li> </ul> | Nominal scale<br><br>Ordinal scale | Frequencies<br><br>Percentages |
| To assess how information system influence adoption of ERP in Nzoia Sugar Company                   | Independent<br>Information System | <ul style="list-style-type: none"> <li>➤ Software</li> <li>➤ Hardware</li> <li>➤ Organization Structure</li> </ul>                 | Nominal scale<br><br>Ordinal scale | Frequencies<br><br>Percentages |

## CHAPTER FOUR

### ANALYSIS OF DATA, PRESENTATION AND DISCUSSION

#### 4.1 Introduction

This chapter shows a representation of analysis from the collected data. The study sought to examine institutional factors influencing adoption of Enterprise Resource Planning (ERP) software in the sugar industry with specific emphasis on Nzoia Sugar Company Limited. The study relied on primary data collected using questionnaires. The collected data was coded into an SPSS software for analysis. The findings were analyzed using descriptive statistics.

#### 4.2 Response Return Rate

The study targeted 142 management staff of Nzoia Sugar Company. From the 142 issued questionnaires, 103 were fully filled and returned making a response rate of 72.5%.

Table 4.1 shows the response return rate.

**Table 4.1 Response Return Rate**

| <b>Dispatched</b> | <b>Returned</b> | <b>Percentage</b> |
|-------------------|-----------------|-------------------|
| 142               | 103             | 72.5%             |
| Total             | 103             | 72.5%             |

According to Babbie (2004), return rates of over 50% are acceptable to analyse and generalize finding to the entire population of interest, return rates lying between 60% and 70% is recommended as being very good while those in the ranges of over 80% are termed as excellent.

In this case the response rate, being at 73% is considered good and the result reliable. This is due to the fact that the researcher administered the questionnaire in person and ensured that the filled questionnaires were fully returned.

### **4.3 Demographic Description of Respondents**

The current study sought to determine the demographic description of respondents since it would assist the researcher categorize the findings based on demographic details.

#### **4.3.1 Gender of the respondents**

Gender of the respondents was sought since its findings would assist the study categorize respondents based on gender and the findings are as shown in table 4.2.

**Table 4.2 Gender of Respondents**

| <b>Category</b> | <b>Frequency</b> | <b>Percentage</b> |
|-----------------|------------------|-------------------|
| Male            | 53               | 51.5              |
| Female          | 50               | 48.5              |
| <b>Total</b>    | <b>103</b>       | <b>100.0</b>      |

From Table 4.2, 51.5% of the respondents were male. 48.5% on the other hand were female. This showed that a balance was made between the two genders which were in line with the constitutional requirement, that is, the one third gender rule.

### 4.3.2 Years of Experience of Respondents

The study sought to determine the respondents' years of their working experience as this would assist categorize the respondents based on the years of experience at their present workplace as the findings are shown in Table 4.3.

**Table 4.3 Respondents' Years of Experience**

| <b>Experience</b> | <b>Frequency</b> | <b>Percentage</b> |
|-------------------|------------------|-------------------|
| 5-10 years        | 29               | 28.2              |
| 10-15 years       | 29               | 28.2              |
| 15-20 years       | 45               | 43.7              |
| <b>Total</b>      | <b>103</b>       | <b>100.0</b>      |

According to Table 4.3 majority of the respondents at 43.7%, had worked for 15-20 years. It is therefore evident from the study findings that respondents had worked in their respective departments for a relatively longer period of time and therefore were conversant with the adoption of the enterprise resource planning (ERP) software in Nzoia Sugar Company Limited.

### 4.3.3 Educational Level of Respondents

The study sought to determine the educational level of respondents as this would assist categorize the respondents based on their levels of education as shown in Table 4.4 of the study findings.

**Table 4.4 Educational Level of Respondents**

| <b>Educational Level</b> | <b>Frequency</b> | <b>Percentage</b> |
|--------------------------|------------------|-------------------|
| Certificate              | 29               | 28.2              |
| Diploma                  | 46               | 44.5              |
| Degree                   | 28               | 27.2              |
| <b>Total</b>             | <b>103</b>       | <b>100.0</b>      |

The Table 4.4 majority of the respondents 44.7% had diplomas as their highest level of education. The findings show that respondents of the study were literate and that they had the right qualifications to adopt an enterprise resources planning software in the study area.

#### **4.4 Quality Control and Adoption of ERP in Nzoia Sugar Company**

Any system of interrelated units can be simply looked at as an organization, all these unit components must be collectively involved and work in tandem to realize total quality management (TQM). Many scholars are able to link quality control and ERP adoption, as the former is the driving force for ERP technology adoption in organizations. This study thus, sought to assess the influence of quality control on adoption of ERP in Nzoia Sugar Company under the following themes;

##### **4.4.1 Re-alignment of Work Processes and Adoption of ERP**

The study sought to determine the influence of re-alignment of work processes on the adoption of ERP in Nzoia Sugar Company. To answer this objective, the respondents were asked to indicate their level of agreement to given statements using a likert scale of; strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1). The study findings are shown in Table 4.5.

**Table 4.5 Re-alignment of Work Processes and Adoption of ERP**

| <b>Work Processes</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>   |
|-----------------------|------------------|-------------------|---------------|
| Strongly Disagree     | 3                | 2.9               |               |
| Disagree              | 10               | 9.7               |               |
| Neutral               | 15               | 14.6              |               |
| Agree                 | 37               | 35.9              |               |
| Strongly Agree        | 38               | 36.9              |               |
| <b>Total</b>          | <b>103</b>       | <b>100.0</b>      | <b>4.0417</b> |

From Table 4.5 the bulk of respondents, 36.9% and with a mean of 4.0417, were of the opinion that re-alignment of work processes strongly influenced the adoption of ERP in Nzoia Sugar Company. Therefore it was deduced that re-alignment of work processes in terms of product design and production processes influenced the adoption of ERP in Nzoia Sugar Company. The findings were in tandem with earlier findings by Nzuki and Okelo-Odongo (2015), who asserted that for successful ERP adoption in organizations, a lot of effort is placed on the business themes and available technology. The ERP system simply aligns all the organizations informational systems and attached databases with its business units so as to gain on the organizations' strategic plans. Therefore for quality control interventions or activities to be achieved by an ERP, re-alignment of work processes follows the four change principles of work processes, variability, analysis and continuous work improvement.

#### 4.4.2 Product Standardization and ERP adoption

The study sought to determine whether product standardization influenced the adoption of ERP in Nzoia Sugar Company. To answer this objective the respondents were asked to indicate their level of agreement to given statements using a likert scale of; to a very large extent (5), large extent (4), moderate (3), little extent (2) and not at all (1). Table 4.6 shows the study findings.

**Table 4.6 Product Standardization and ERP Adoption**

| <b>Product Standardization</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>   |
|--------------------------------|------------------|-------------------|---------------|
| Not At All                     | 3                | 2.9               |               |
| Little Extent                  | 15               | 14.6              |               |
| Moderate                       | 10               | 9.7               |               |
| Large Extent                   | 38               | 36.9              |               |
| Very Large Extent              | 37               | 35.9              |               |
| <b>Total</b>                   | <b>103</b>       | <b>100.0</b>      | <b>4.0835</b> |

From Table 4.6 it can be deduced that the majority of respondents, 36.9% and with a mean of 4.0835, asserted that product standardization influenced the adoption of ERP in Nzoia Sugar Company to a large extent. Therefore product standardization played an important role in the adoption of ERP in Nzoia Sugar Company.

The findings concur with the findings by Morris & Venkatesh, (2010) who suggested that quality improvement is through many conversions. Initially, quality control was done after completion of the production, such that the product was inspected to confirm if it met the requirements; later managers shifted to prevention mode as opposed to inspection mode, this prevented losses and



risks. Quality movement is a shift to include quality in every production step within the organizational set-up.

The study findings shows an alteration where management concentrate on quality as an entire organizational function as opposed to specific manufacturing unit; the shift also looks at meeting the customers' needs, both internal and external ones by standardization of products. As such the empirical findings highlight the value in improving quality initiatives within all manufacturing units, which further showcase the critical factors needed for success during the implementation phase of quality management in an effort to enhance performance and customer satisfaction.

#### **4.4.3 Strategic Direction and Adoption of ERP**

The study sought to determine whether strategic direction influenced the adoption of ERP in Nzoia Sugar Company. To answer this objective the respondents were asked to indicate their level of agreement to given statements using a likert scale of; strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1). Table 4.7 shows the study findings.

**Table 4.7 Strategic Direction and Adoption of ERP**

| <b>Strategic Direction</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>  |
|----------------------------|------------------|-------------------|--------------|
| Strongly Disagree          | 3                | 2.9               |              |
| Disagree                   | 10               | 9.7               |              |
| Neutral                    | 11               | 10.7              |              |
| Agree                      | 40               | 38.8              |              |
| Strongly Agree             | 39               | 37.9              |              |
| <b>Total</b>               | <b>103</b>       | <b>100.0</b>      | <b>4.090</b> |

From Table 4.7 the study findings showed that majority of respondents, 38.8% and with a mean of 4.090, indicated that the company's strategic direction influenced the adoption of ERP in Nzoia Sugar Company. They were in agreement that adoption of ERP system in Nzoia Sugar Company Limited was dependent on its' strategic direction.

These findings are in line with Martisons and Hempel, (2011) study of the Australian organizations, which noted that strategic direction by the management unit in any organization led to ERP adoption. The management must understand what their customers expect and how they measure quality and communicate the same to all units within the organization.

The leadership in an organization must also have a well-defined and thought-out strategy for implementing quality control which leads to successful adoption of ERP. The leadership can have a steering committee to plan, direct, implement and monitor progress in quality control measures, and also seek the perception of lower management levels, since involvement eases strains during the implementation phase. The steering committee is under the guidance of a sponsor, mostly a senior management team member to link all aspects of the organization. In addition installation of quality assurance systems like ISO 9000 or other systems aides in ERP adoption.

#### **4.5 Labour Allocation and Adoption of ERP**

Adoption of ERP, which is a complex system involves incorporation of human resources and it helps if the appropriate parties are well informed of the task and what is needed from them. Any success in the ERP project implementation involves the different workforce parties. This study, therefore sought to determine the extent to which labour allocation influenced adoption of ERP in Nzoia Sugar Company under the following themes;

#### 4.5.1 Employee Set of Business Skills and ERP Adoption

The study sought to assess the extent to which employee set of business skills influenced the adoption of ERP in Nzoia Sugar Company. To answer this variable the respondents were asked to indicate their level of agreement to given statements using a likert scale of; very large extent (5), large extent (4), moderate (3), little extent (2) and not at all (1). Table 4.8 shows the study findings.

**Table 4.8 Employee Set of Business Skills and ERP Adoption**

| <b>Employee Business Skills</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b> |
|---------------------------------|------------------|-------------------|-------------|
| Not at all                      | 3                | 2.9               |             |
| Little extent                   | 15               | 14.6              |             |
| Moderate                        | 10               | 9.7               |             |
| Large extent                    | 39               | 37.9              |             |
| Very large extent               | 36               | 34.9              |             |
| <b>Total</b>                    | <b>103</b>       | <b>100.0</b>      | <b>4.07</b> |

From Table 4.8, it was asserted that majority of respondents, 37.9% and as indicated by a mean of 4.07, agreed that employee set of business skills influenced the adoption of ERP in Nzoia Sugar Company to a large extent. Therefore, employee's set of business skills and expertise are some of critical success factors that scholars and experts recommend during ERP adoption and implementation. The findings of this study concurs with Skok and Legge (2012) and Wateridge (2007) indicating that right set of business skills and IT knowledge are essential for the success of ERP projects, since the skill-set defined by the workforce influences the outcome of ERP projects in an organization.

#### 4.5.2 Quality Labour and ERP Adoption

The study also sought to determine the extent to which quality labour influenced the adoption of ERP in Nzoia Sugar Company, findings are shown in Table 4.9.

**Table 4.9 Quality Labour and ERP Adoption**

| <b>Quality Labour</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>   |
|-----------------------|------------------|-------------------|---------------|
| Not at all            | 3                | 2.9               |               |
| Little extent         | 15               | 14.6              |               |
| Moderate              | 10               | 9.7               |               |
| Large extent          | 40               | 38.8              |               |
| Very large extent     | 35               | 33.9              |               |
| <b>Total</b>          | <b>103</b>       | <b>100.0</b>      | <b>4.9835</b> |

From Table 4.9 it was deduced that majority of respondents, 38.8% and with a mean of 4.9835, were of the opinion that the quality of the labour force influenced the adoption of ERP at Nzoia Sugar Company to a large extent. Availability of quality labour from the human resources pool largely influences the success of ERP adoption.

These findings are similar to findings of Stewart et al. (2010) stating that the highly skilled people who are qualified, capable and have high learning potentials lead to success in ERP adoption. The management team must have well trained, qualified and professionals who can control all aspects of the project, arresting and solving problems that accrue during the implementation process.

### 4.5.3 Management Leadership and ERP Adoption

Lastly the study sought to determine the extent to which management's leadership commitment influenced the adoption of ERP in Nzoia Sugar Company as shown in Table 4.10.

**Table 4.10 Management Leadership Commitment and ERP Adoption**

| <b>Leadership Commitment</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>  |
|------------------------------|------------------|-------------------|--------------|
| Not at all                   | 15               | 14.6              |              |
| Little extent                | 3                | 2.9               |              |
| Moderate                     | 10               | 9.7               |              |
| Large extent                 | 37               | 35.9              |              |
| Very large extent            | 38               | 36.9              |              |
| <b>Total</b>                 | <b>103</b>       | <b>100.0</b>      | <b>4.135</b> |

From Table 4.10 majority of respondents, 36.9% and with a mean of 4.135, showed that management leadership commitment greatly influenced the adoption of ERP in Nzoia Sugar Company to a very large extent. Therefore organizational leaders must portray clear vision, high communication skills, people skills, motivation and physical energy, as noted by Stewart et al. (2010) for successful adoption of ERP. Enhancing leadership skills can be done through educational forums and training programs for success in the adoption of ERP.

### 4.6 Facility Layout and the Adoption of ERP System

Facility layout has a lot to do with parameters than the layout scenarios and parameterized models. This study therefore sought to determine the extent to which facility layout influenced ERP adoption in Nzoia Sugar Company under the following themes;

#### 4.6.1 Organization Structure and Adoption of ERP

The study sought to determine the extent to which organizational structure influenced the adoption of ERP in Nzoia Sugar Company and Table 4.11 shows the study findings.

**Table 4.11 Organization Structure and Adoption of ERP**

| <b>Organization Structure</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>   |
|-------------------------------|------------------|-------------------|---------------|
| Not at all                    | 3                | 2.9               |               |
| Little extent                 | 10               | 9.7               |               |
| Moderate                      | 15               | 14.6              |               |
| Large extent                  | 34               | 33.0              |               |
| Very large extent             | 41               | 39.9              |               |
| <b>Total</b>                  | <b>103</b>       | <b>100.0</b>      | <b>4.0417</b> |

The statistics in Table 4.11 showed that majority of respondents, 39.9% and with a mean of 4.0417 were of the opinion that the organization structure influenced the adoption of ERP in Nzoia Sugar Company to a very large extent.

Earlier studies had shown that there are two major ways of adopting ERP systems. However, the adoption of any of the two ways is dependent on the organization structure, therefore, companies can adopt the system at once or in phases. The findings of this study are supported by earlier findings by Dembla, (1999) who asserted that the types of adoption depends on structure, culture and policies within an organization. In cases of multinational corporations with different units of operations may opt to adopt the ERP system in phases, but international organizations with the same set of practices may prefer to adopt its system all in one go.

#### 4.6.2 Supplier Technical Support and Adoption of ERP

The study sought to determine the extent to which supplier technical support influenced the adoption of ERP in Nzoia Sugar Company and Table 4.12 shows the study findings.

**Table 4.12 Supplier Technical Support and Adoption of ERP**

| <b>Technical Support</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>  |
|--------------------------|------------------|-------------------|--------------|
| Not at all               | 5                | 4.9               |              |
| Little extent            | 13               | 12.6              |              |
| Moderate                 | 10               | 9.7               |              |
| Large extent             | 42               | 40.9              |              |
| Very large extent        | 33               | 31.9              |              |
| <b>Total</b>             | <b>103</b>       | <b>100.0</b>      | <b>4.137</b> |

The statistics in Table 4.12 showed that majority of respondents, 40.9% with a mean of 4.137, were of the opinion that supplier technical support influenced the adoption of ERP in Nzoia Sugar Company to a large extent. Many companies today are in the process or have already installed the ERP system to aide their business activities because of the technical support they enjoy from the manufacturers. Moreover the market share for ERP vendors continues to grow indicating that more companies are embracing ERP. The top three ERP vendors in the world are SAP, Oracle and Sage (Forbes, 2013) and due to enhanced completion, these vendors keep updating their products with advanced and new technology-based features and provision of technical services to their clients. Therefore it is important for suppliers of ERP to provide technical support in the adoption and overall performance of ERP systems.

### 4.6.3 Asset Management and ERP Adoption

The study sought to determine whether asset management influenced adoption of ERP in Nzoia Sugar Company and Table 4.13 shows the study findings.

**Table 4.13 Asset Management and ERP Adoption**

| <b>Asset Management</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>  |
|-------------------------|------------------|-------------------|--------------|
| Not at all              | 8                | 7.8               |              |
| Little extent           | 10               | 9.7               |              |
| Moderate                | 12               | 11.7              |              |
| Large extent            | 40               | 38.9              |              |
| Very large extent       | 33               | 31.9              |              |
| <b>Total</b>            | <b>103</b>       | <b>100.0</b>      | <b>4.156</b> |

Based on Table 4.13, it can be deduced that majority of respondents, 38.9% with a mean of 4.156, were of the opinion that asset management requirements influenced the adoption of ERP in Nzoia Sugar Company to a large extent. Therefore ERP systems can enable organizations to better manage their assets. A clear view of all asset data across the company is necessary to support decision making. ERP systems provide greater visibility of working capital which helps streamline cash flows and optimize transactions with customers and vendors (Laudon & Laudon, 2013).

In addition, ERP systems also assist organizations to manage partners and dealers effectively. Forecasting and replenishment tools help create detailed plans for demand and supply and for distribution. Organizations face scrutiny of financial records, safety precautions and labour law



compliance. ERP systems enable management to show compliance through accurate and detailed records.

#### **4.7 Information System and ERP Adoption**

The role of information systems in an organization are increasing to accommodate all activities, action plans and developments to account for growth. Therefore this study sought to assess how information system influenced the adoption of ERP in Nzoia Sugar Company under the following themes;

##### **4.7.1 Hardware Compatibility and ERP Adoption**

The study sought to determine whether hardware compatibility influenced the adoption of ERP in Nzoia Sugar Company and Table 4.14 shows the study findings.

**Table 4.14 Hardware Compatibility and ERP Adoption**

| <b>Employee Business Skills</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>   |
|---------------------------------|------------------|-------------------|---------------|
| Strongly disagree               | 8                | 7.8               |               |
| Disagree                        | 10               | 9.7               |               |
| Neutral                         | 10               | 9.7               |               |
| Agree                           | 45               | 43.7              |               |
| Strongly Agree                  | 30               | 29.1              |               |
| <b>Total</b>                    | <b>103</b>       | <b>100.0</b>      | <b>4.0903</b> |

The statistics in Table 4.14 showed that majority of respondents, 43.7% with a mean of 4.0903, agreed that the hardware compatibility influenced the adoption of ERP in Nzoia Sugar Company.

Technology plays a fundamental role in the current business environment as it is tasked with providing accurate data and information for effective decision making, hence begging the need for adoption of Enterprise Resource Planning (ERP) system. ERP systems are hardware packages using the relational database to unify all organizational units using the separate but integrated modules (Scapens & Jazayeri, 2008).

As large corporations acquire and merge with other companies with different systems, Simon (2008) asserts that adoption of ERP system eases in the integration of all the separate units from each of the information systems initially owned by the individual companies. As such, ERP systems have quickly become popular with large corporations in need of seamless integration, but its benefits has drawn even the mid-sized and small companies.

#### 4.7.2 Software Compatibility and ERP Adoption

The study sought to determine whether the software compatibility influenced the adoption of ERP in Nzoia Sugar Company as the findings are shown in Table 4.15.

**Table 4.15 Software Compatibility and Implementation of ERP**

| <b>Software Systems</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Mean</b>   |
|-------------------------|------------------|-------------------|---------------|
| Strongly disagree       | 3                | 2.9               |               |
| Disagree                | 15               | 14.6              |               |
| Neutral                 | 10               | 9.7               |               |
| Agree                   | 40               | 38.8              |               |
| Strongly Agree          | 35               | 33.9              |               |
| <b>Total</b>            | <b>103</b>       | <b>100.0</b>      | <b>4.9835</b> |

The statistics in Table 4.15 showed that majority of respondents, 38.8% and with a mean of 4.9835, were of the opinion that software compatibility influenced the adoption of ERP in Nzoia Sugar Company. Therefore software compatibility influenced the adoption of ERP in organizations.

Advancement in ERP systems follows the growth of computer hardware and software systems. In the 1970s, planning for product requirements was as per the master production schedule in the Materials Requirement Planning (MRP); as 1980s rolled in with new software systems MRP II was introduced which emphasized on optimization and synchronization of materials, parts and production requirements. Late 1980s and early 1990s came with the first model of ERP systems covering the entire enterprise, creating inter-functional unit coordination and integrating production units. The technological foundations of MRP, MRP II and ERP systems emphasis is on integrating business units by providing accessibility and visibility across the enterprise. (Valacich & Schneider, 2012).

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter summarizes the analyzed findings from the data collected by the researcher. The summarized findings are used in making relevant conclusions based on objectives of the study. The chapter also gives relevant recommendations to policy makers. Various limitations encountered while carrying out the study are also brought out clearly. The chapter winds up with suggestions for further research to academicians and researchers in future.

#### **5.2 Summary of the Findings**

The main aim of this study was to examine institutional factors influencing adoption of Enterprise Resource Planning (ERP) software in the sugar industry in Nzoia Sugar Company. This study was guided by four specific objectives, namely to determine how quality control, labour allocation, facility layout and information systems influenced the adoption of ERP by Nzoia Sugar Company. The collected data was coded into SPSS software and the analysis was done using descriptive statistics. The analyzed findings are summarized below.

The first objective of the study was to determine how quality control influenced the adoption of ERP by Nzoia Sugar Company. From the findings, majority of respondents held the view that there was re-alignment of work processes with a mean of 4.0417, product standardization with a mean of 4.0835, and the strategic direction with a mean of 4.09 directly influenced the adoption of ERP in Nzoia Sugar Company.

The second objective of the study was to determine the extent to which labour allocation influenced the adoption of ERP by Nzoia Sugar Company. From the findings, majority of respondents were of the opinion that employee set of business skills with a mean of 4.07, quality of labour with a mean of 4.9835 and management leadership with a mean of 4.135 influenced the adoption of ERP in Nzoia Sugar Company.

The third objective of the study examined the extent to which facility layout influenced the adoption of ERP by Nzoia Sugar Company. The study established that majority of respondents asserted that organizational structure with a mean of 4.0417, supplier technical support with a mean of 4.137 and asset management with a mean of 4.156 directly influenced the adoption of ERP in Nzoia Sugar Company.

The last objective of the study was to establish how information system influenced the adoption of ERP by Nzoia Sugar Company. The findings of the study indicated that that majority of respondents deduced that hardware compatibility with a mean of 4.0903 and software compatibility with a mean of 4.9835 directly influenced the adoption of ERP in Nzoia Sugar Company.

### **5.3 Conclusion**

The purpose of the study was to examine institutional factors influencing adoption of Enterprise Resource Planning (ERP) software in the sugar industry with specific emphasis on Nzoia Sugar Company. The study was guided by the following specific objectives: to determine how quality control, labour allocation, facility layout and information systems influenced the adoption of ERP by Nzoia Sugar Company. The collected data was coded into SPSS software and the analysis was done using descriptive statistics. The analyzed findings are summarized below.

The first objective of the study was to determine how quality control influenced the adoption of ERP by Nzoia Sugar Company. From the findings, majority of respondents were of the opinion that there was re-alignment of work processes, product standardization and the strategic direction directly influenced the adoption of ERP in Nzoia Sugar Company.

The second objective of the study was to determine the extent to which labour allocation influenced the adoption of ERP by Nzoia Sugar Company. From the findings, majority of respondents were of the opinion that employee set of business skills, quality labour and management leadership influenced the adoption of ERP in Nzoia Sugar Company.

The third objective of the study examined the extent to which facility layout influenced the adoption of ERP by Nzoia Sugar Company. The study established majority of respondents asserted that organizational structure, supplier technical support and asset management directly influenced the adoption of ERP in Nzoia Sugar Company.

The last objective of the study was to establish how information system influenced the adoption of ERP by Nzoia Sugar Company. The findings of the study indicated that that majority of respondents deduced that hardware and software compatibility directly influenced the adoption of ERP in Nzoia Sugar Company.

#### **5.4 Recommendations**

Based on the findings of the study the researcher recommends that;

- i. On ERP adoption, top management support is necessary. The study recommends that the top management of Nzoia Sugar Company Limited and other Corporations in Kenya should ensure that their ERP systems are dynamic

allowing adoption of new business models. The Information and Communication Technology department of Nzoia Sugar Company Limited should ensure that the ERP systems are linked to the strategic goals of the organization to enhance quality control.

- ii. The top management team of Nzoia Sugar Company Limited should actively participate in the ERP adoption process to enhance labour allocation. For other government institutions and corporations, their top management teams should be committed to ERP adoption in their respective organizations.
- iii. All state corporations in Kenya should put in place high speed internet connectivity in their organizations to effectively enhance adoption of ERP. It is also important for organization to customize their ERP systems in order to fit the business models and the overall facility layout.
- iv. The ICT department of Nzoia Sugar Limited and all other organizations operating in Kenya should ensure that their ERP systems are custom-made, making them user friendly. All companies aspiring to adopt ERP should restructure their business operations before embarking on the adoption process. The ICT departments of state corporations in Kenya should ensure that their ERP systems capture reusable best business practices making their adoption easier.
- v. In order to help organizations increase the chances of a successful ERP adoption, an understanding of change management in itself is also important. This can be done through training workshops otherwise there can be an unfriendly response to the whole system.

## **5.5 Suggestions for Further Research**

Based on the findings of this study, the following areas have been proposed for further research studies;

- i. A similar study to be carried out in other sugar cane companies so as to compare and generalize the study findings.
- ii. Effect of ERP on employee performance in sugarcane industries in Kenya.



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## **APPENDICES**

### **Appendix 1: Letter of Introduction to the Respondents/Letter of Transmittal**

Sylvia Namae Barasa

P.O BOX 598

**KITALE.**

Dear respondent,

#### **REF: FILLING OF THE QUESTIONNAIRE**

I am a postgraduate student at the University of Nairobi, school of continuing and distance education, currently undertaking a master's degree in project planning and management. You have been identified as a respondent to this questionnaire. Please find the attached questionnaire which is designed to gather information on the **INSTITUTIONAL FACTORS INFLUENCING ADOPTION OF ENTERPRISE RESOURCE PLANNING SOFTWARE IN THE SUGAR INDUSTRY IN KENYA**. All answers are confidential and will only be used for academic purposes.

This research will be carried out in partial fulfillment of the requirements for the award of the degree of Master of Arts in Project Planning and Management. I will be glad if you fill and return the completed questionnaire at a suitable time.

Thank you.

Yours faithfully,

Sylvia Barasa

L50/86778/2016

## Appendix 2: Questionnaire

### PART A: BACKGROUND INFORMATION

1. What is your gender?

Male [  ]

Female [  ]

2. What position do you hold at Nzoia Sugar Company?

Top Level Manager [  ]

Middle Level Manager [  ]

Low Level Manager [  ]

3. How long have you worked at Nzoia Sugar Company?

1-5 years [  ]

5-10 years [  ]

10-15 years [  ]

15-20 years [  ]

More than 20 years [  ]

4. What is your highest level of education?

Certificate [  ]

Diploma [  ]

Bachelor's Degree [  ]

Master's Degree [  ]

**PART B: Quality Control and ERP Adoption**

5. Which ERP (enterprise resource planning) system do you have? Examples: SAP, Oracle, JD Edwards, Navision, Scala, Baan, Nova, Movex, i2, Proteus, etc. ....

6. When (year) did your organization COMPLETE the adoption of the ERP system:.....

7. These are statements on enterprise resource planning adoption in organizations. Please rate how quality control has influenced adoption of ERP at Nzoia Sugar Company. Use a Likert scale which ranges from 1 - 5 where:

1 - Strongly Disagree, 2 - Disagree, 3- Neutral, 4 – Agree, and 5- Strongly Agree

|   | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Re-alignment of work processes influenced adoption of ERP           |   |   |   |   |   |
| Standardization in our business products influenced adoption of ERP |   |   |   |   |   |
| Input and output variability influenced adoption of ERP             |   |   |   |   |   |

8. In general terms, to what extent do you agree that quality control has influenced adoption of ERP at Nzoia Sugar Company?

- Not at all [     ]
- Little Extent [     ]
- Moderate Extent [     ]
- Large Extent [     ]
- Very Large Extent [     ]

**PART C: Labour Allocation and Adoption of ERP**

9. Below are statements on the influence of labour allocation on ERP adoption. Rate how the labour allocation at Nzoia Sugar Company has influenced the adoption of ERP. Use a Likert scale which ranges from 1 -5 where;

1 - Not at all, 2 - Little Extent, 3 - Moderate Extent, 4 - Large Extent, and 5 - Very Large Extent

|   | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Employee expertise/skills were heavily considered in ERP adoption |   |   |   |   |   |
| Labour quality influenced ERP adoption                            |   |   |   |   |   |
| Management leadership was key to ERP adoption                     |   |   |   |   |   |

10. In general terms, how has labour allocation influenced adoption of ERP at Nzoia Sugar Company?

Not at all [     ]

Little Extent [     ]

Moderate Extent [     ]

Large Extent [     ]

Very Large Extent [     ]

**PART D: Facility Layout and Adoption of ERP**

11. These are statements on facility layout and adoption of ERP as applied in organizations. Please rate how facility layout influenced the adoption of ERP at Nzoia Sugar Company. Use a Likert scale which ranges from 1 -5 where;

1 - Not at all, 2 - Little Extent, 3 - Moderate Extent, 4 - Large Extent, and 5 - Very Large Extent to rate the extent of your agreement with each statement

|   | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Organizational structure was key to the adaptation of ERP |   |   |   |   |   |
| Supplier technical support was key to ERP adoption        |   |   |   |   |   |
| Asset management were key to adoption of ERP system       |   |   |   |   |   |

**PART E: Information Systems and Adoption of ERP**

12. These are statements on information system of firms and their influences. Using the Likert scale rate the influence of information systems on adoption of ERP at Nzoia Sugar Company. Use a Likert scale which ranges from 1 -5 where:

1- Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 – Agree, and 5- Strongly Agree; to rate the extent of your agreement with each statement

|   | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Software compatibility influenced ERP integration |   |   |   |   |   |
| Hardware interfaces were key to ERP adoption      |   |   |   |   |   |
| Organizational Structures influenced ERP adoption |   |   |   |   |   |