# AN INVESTIGATION OF THE CHALLENGES FACING ENTERPRISE RESOURCE PLANNING SYSTEMS (ERPs) IMPLEMENTATION IN KENYA

UNIVERSITY OF NAIROBI
TOWER KABETE LIBRARY

BY

**CLEMENT M. NYANDIERE**

A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION (MBA)

FACULTY OF COMMERCE, UNIVERSITY OF NAIROBI

**SEPTEMBER 2002**

## DECLARATION

This research project is my original work and has not been submitted for a degree in any other University.

Signed _____ Date: 03.10.2002

**CLEMENT M. NYANDIERE**

This research project has been submitted for examination with my approval as the University Supervisor.

Signed _____ Date: 5/10/2002

**MR. J. T. KARIUKI**
Lecturer, Department of Management Science
Faculty of Commerce, University of Nairobi

## DEDICATION

*To my late dad Gerald who encouraged me to be a scholar;*

*and my wife Edna and son Adrian to follow the steps.*

**ACKNOWLEDGEMENTS**

I would wish to acknowledge with sincerity the support of the following persons who in one way or the other contributed to the success of the study:

My supervisor, Mr J T Kariuki for his guidance throughout the project;

My wife Edna for her patience during the times when I had to spend long hours reading through books and preparing various elements of the research;

Henry Gichana and Clement Kitetu, my two able research assistants who helped a great deal in data gathering;

My friends, especially Patrick Shabaya, Okech Odhiambo and Richard Nyambati for their encouragement;

Thank you all.

## ABSTRACT

In the past five years, many companies in Kenya have invested a lot of capital in information systems that range from transaction processing systems to complex inter-organisational systems. Companies have implemented information systems on the belief that they will provide organisations with needed tools for information resource management. One of the systems that companies have invested in is the Enterprise Resource Planning systems (ERPs).

Most companies in Kenya are making frantic efforts to implement ERPs, which are being marketed as a perfect solution to the organisational problems of information management. The companies that have implemented ERPs have undergone a lot of positive changes while others may have had the worst of the experiences. Against this background, the research study sought to evaluate the challenges that companies that have implemented ERPs in Kenya and the vendors of ERP solutions have faced in their quest to implement ERPs in Kenya. The focus of the study was on all companies that had implemented the ERPs by March 2002 as well as vendors of ERPs in the country.

Twenty-eight companies that had implemented ERPs and eight vendors of the software were studied. Primary data for the study was collected using questionnaires. All the companies surveyed indicated that the cost of ERP systems was a major challenge. The companies felt the cost of software, hardware as well as costs incurred in maintenance and training of users was too high. Companies also felt that many of them had not fully realised the benefits and demands/ requirements of the systems while some found the systems too complex to manage.

Vendors concurred with companies that had implemented the systems on the cost issue and indicated that this had put off many companies that had intentions of implementing the systems. However, they noted that ERPs are not that complex to manage. Vendors too had had a share of their problems with companies for whom they had implemented the systems. The companies take too long to pay them while others do not honour contracts. They too noted that many of the staff of the companies that had implemented ERPs are never ready to accept the new systems hence the resistance during implementation and use of the systems.

Despite the challenges that companies that have implemented ERPs and vendors have encountered, a number of companies have successfully implemented the ERPs and attribute their increased efficiency and better management of their resources to the ERP system. Most of the companies that have implemented the systems are in the manufacturing and allied sector followed by those in the service industry. Vendors too are determined to reach more companies as they aspire to market ERPs to many more companies, especially those in the service industry. There is still a market for ERP systems in Kenya as many more companies are moving towards integrating their business functions.

## TABLE OF CONTENTS

## LIST OF FIGURES AND TABLES

# CHAPTER 1

# INTRODUCTION

## 1.1 Background

Effective management in organisations involves a lot of decision-making. In order to carry out effectively the management functions of planning, organising, staffing, directing and controlling, management needs to make sound decisions. However, decision-making has to be based upon sound information. Availability of quality information to management enhances sound decision-making leading to good performance of the company in meeting its objectives (Lucey, 1998).

Information has become an important resource in all organisations and is being viewed as a competitive tool that is making many organisations to invest in information systems that will facilitate the collection, processing, storage, and sharing of information across the organisation. Laudon (2000) notes that until recently, information was not considered an important asset for a firm. However this has changed. Today, many organisations are investing in information systems to help them harness and manage information.

Many definitions of information systems abound. According to Laudon (2000), an information system is a set of inter-related components that collect, retrieve, process, store and disseminate information to support decision-making and control in an organisation. These systems can also help managers and workers to analyse problems, visualise complex subjects and create new products. Modern information systems utilise information technology (IT) to undertake the activities of data gathering, processing,

storage, retrieval and dissemination. Information technology (IT) incorporates a set of technologies that utilise computers, telecommunications and related technology in the management of information.

Organisations have different information systems for different applications. Business information systems can be classified broadly into operation support systems (OSS) and management support systems (MSS). The OSS focus on the day-to-day activities of the enterprise and include systems for transaction processing, process control and office automation. The MSS on the other hand are mainly focused on middle and senior management and provide capabilities for decision support and control. Examples of these systems include Information Reporting Systems (IRS), Decision Support Systems (DSS) and Executive Information Systems (EIS) (Lucey, 1998). There are also knowledge management systems, which offer support to personnel at both operations and management levels. These systems support the creation, organisation and dissemination of business knowledge to employees and managers (O'Brien, 1999).

Business applications of information systems in the real world are typically integrated combinations of several types of information systems. Thus most information systems are designed to produce information to support decision-making for various levels of management and business functions. The cross-functional systems are useful in integrating all functions of the firm; a concept referred to as the enterprise approach to information management. It is in the category of cross-functional integrated systems that Enterprise Resource Planning systems (ERPs) fall. Enterprise systems provide capability

for integration of all the major business processes and the possibility of controlling the processes from one central point (O'Brien, 1999).

## 1.2 ERPs Definition

Enterprise Resource Planning systems (ERPs) have been defined in different ways by various authors. According to Davenport (1998) ERP comprises of commercial software package that promises seamless integration of all the information flowing through the company – finance, accounting, human resource, supply chain and customer information.

PeopleSoft, a vendor of ERPs, describes ERP as a collection of software which ties together all of an enterprise's various functions – human resources, finance, manufacturing, sales among others and the analysis of this data to plan production, forecast sales, and even analyse quality of products.

O'Brien (1999) defines an ERP as a cross functional system that serves as a framework to integrate and automate many of the business processes that must be accomplished within the manufacturing, logistics, distribution, accounting, finance, and human resource functions of a business. It is a family of software modules that supports the business activities in the vital office processes.

ERPs are cross-functional information systems that address the enterprise needs of organisations, taking the process view of an organisation to meet the organisational goals by integrating all functions of a business. ERPs are large integrated information systems

that fundamentally bring together different organisational processes and functions. ERPs facilitate data sharing and eliminate redundancy by promising one shared database, one application (ERP) and one user interface accessible to all users from various functional points.

ERPs overcome the problems of functional systems that are disjointed and which mainly focus on their functional areas. The functional systems approach leads to duplication of data across departments and communication is affected. ERPs integrate all functions hence facilitating information management across the organisation (Turban *et al,* 1999).

## 1.3 Statement of the Problem

Companies in Kenya have realised the importance of information technology (IT) to their business operations and many of them have implemented a wide range of information systems for their operations. Among the systems that seem to have gained prominence in the 1990s are ERPs.

In the past five years, a number of companies in Kenya have implemented Enterprise Resource Planning systems in their organisations. Since Kenya Power and Lighting Company (KPLC) implemented the SAP R/3 system in 1997, a number of other companies have also implemented similar products. There are many others that may also be planning to implement these systems for their operations.

Implementation of any new system often brings about a lot of challenges. For example, ERPs involve a lot of organisational change and realignment of departments and a new

culture has to emerge of managing resources from a central point (O'Brien, 1999). Although a number of challenges of ERPs implementation and use have been identified, they are mainly experiences of companies in the developed economies. This study aimed at finding out whether Kenyan companies face similar or different challenges in the implementation and use of these systems. Equally important was the need to assess the challenges vendors faced as they penetrate the Kenyan market with their ERPs.

The study therefore focused on ERPs and the key questions that sought answers were:

- What challenges have companies that have implemented ERP systems encountered in the process of implementing and using the ERPs?

- What challenges do vendors of the ERPs in the Kenyan market face?

## 1.4 Objectives of the study

The objectives of the study were:

i) To examine the challenges Kenyan companies face in their effort to implement and use ERPs.

ii) To examine the challenges vendors of ERPs face in Kenya in the effort to market and implement their products.

## 1.5 Significance of the study

ERPs are among the information systems that have lately gained popularity among many institutions that are concerned with integrating their operations to improve on the information resource management. The outcome of this research is useful to information technology users especially the companies that may be considering ERP implementation. Specifically, the results of the study will help:

- Decision-makers in organisations to implement systems, especially ERPs that are beneficial to the organisations in terms of strategic importance in information resource management. For managers, the research will act as a guide to effective implementation of ERPs for their businesses;

- IT professionals, especially those involved in implementation of ERPs on the best ways they can implement systems, that address the needs of the market, and in a way to avoid pitfalls encountered by current users;

- ERPs vendors to appreciate the problems their customers are facing and develop strategies to avoid or minimise these problems;

- Those vendors that plan to market their products in Kenya to benefit from the experience of the vendors already in the Kenyan market.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 Enterprise Resource Planning Systems (ERPs) in Business

Since the 1980s the business environment has changed dramatically. Information technology has revolutionised businesses bringing forth new ways of doing business that are innovative, efficient and more effective. Organisations today confront new markets, new competition and increasing customer expectations hence the need to efficiently manage the information about competitors, their products, market trends, customer demands and technological developments (Laudon, 2000).

Munguti (2001) points out that the changes in the business environment have made a demand on enterprises to lower total costs in the complete supply chain; shorten throughput time; reduce stock to a minimum; enlarge products assortment; improve product quality; provide more reliable delivery date and good service to customers; and to efficiently co-ordinate global demand, supply, and production.

ERPs are implemented on the strength that they offer capabilities to better manage information relating to planning, production, sales and marketing, accounts and finance. ERP software automates many basic processes such as filling an order or scheduling a shipment with the goal of integrating information across the company and eliminating complex, expensive links between computer systems in different areas of the business. The systems introduce the power of internetworking among the functional departments and collaboration within and without the organisation (Laudon, 2000).

## 2.2 ERP Evolution

Many companies began installing ERP systems as a vital conceptual foundation for reengineering business processes, becoming a vital engine to accomplish cross-functional processes. Enterprise resource planning arose as a way to provide companies with an integrated suite of applications to tie all back-office functions and data sources together into one neat system (Earls, 2000).

ERPs evolved out of the organisational planning systems. First came Materials Requirement planning (MRP) systems, developed by Baan co. Ltd in 1982. MRPs were mainly used in materials control in industry, focussing on raw materials, work in progress (WIP) and finished goods inventory. In 1985, MRP systems were further improved into Manufacturing Resource Planning (MRP II) systems, which brought together the production functions with the sales and marketing functions. The systems were first introduced in the Dutch market and launched into the international market in 1989. With MRP II, it was now possible to monitor the inbound as well as outbound logistics. The failures of MRPII to bring together all the functional areas of the organisation led to the development in late1980s of the Enterprise Resource Planning (ERP) systems that integrated all functions in the enterprise. The first-generation ERP packages came into the market in 1990.

## 2.2 ERP products in the Kenyan market

The leading software for ERP include:

**1. SAP (Systems, Applications & Products in Data Processing)**

Developed first in Germany, the SAP software crosses functional departments and can be extended along the supply chain to suppliers and customers. Companies have been successful in integrating several hundred applications into SAP, saving millions of dollars and significantly increasing customer satisfaction. Mobil Oil consolidated 300 different systems by implementing SAP R/3 in U.S. petrochemical operations alone (O'Brien, 2002).

**2. ORION**

Orion is an ERP Software developed in the United Arab Emirates for mid market application and Simba Technologies is a local reseller and implementation partner in Kenya.

**3. Oracle Financials**

This system is developed and marketed by Oracle inc., headquartered in Netherlands, a leading authority in database management systems. The software mainly focuses on the financial module for organisations.

**4. BAAN**

Founded by Baan brothers in 1978 in the Netherlands, Baan helps companies to compete in the 'networked economy' with its ever-increasing demands for more information, integration and collaboration. Through its powerful new iBaan suite of Internet-enabled solutions, Baan is ideally placed to support organisations in the manufacturing, logistics, service and engineering industries as they move towards tighter integration of their complex processes, closer collaboration with customers and partners, and providing employees with build-to-order shop floor data and supply information.

**5. Navision**

Navision is a worldwide ERP solution by Navision company of Denmark which commands about 80 per cent of customers among middle market ERP users in Europe. Globally, Navision is a leading provider of cost-effective and adaptable business solutions. The company has a customer base of more than 133,000 and a global network of more than 2,300 partners (Akumu, 2002).

## 2.3 BENEFITS OF ERPs

Companies that have implemented ERPs in the developed economies have reported a number of benefits:

### 2.3.1 Integration

ERP creates a framework for integrating and improving back office systems that result in major improvements in customer service, production and distribution efficiency. ERP has

been positioned as the foundation for integration of enterprise-wide information systems. The systems link together all of a company's operations including human resources, finance and accounts, manufacturing, and distribution as well as connect the organisation to its customers and suppliers (O'Brien, 2002).

The integration of various departments is depicted below:


**Figure 2-1:** [Source: O'Brien, J. (2002) **Management Information Systems: Managing Information Technology in the E-Business Enterprise** 5th Ed. *page 129]*

ERP became a major corporate application of the early 1990s, based on its promise of integration and standardisation of processes at an affordable price (Earls, 2000).

### 2.3.2 Information sharing and collaboration

ERPs provide vital cross-functional information quickly on business performance to managers to significantly improve their ability to make better business decisions. The systems can enable transactions such as payments and purchase orders to be carried out electronically among different companies, thereby reducing the cost of obtaining



UNIVERSITY OF NAIROBI
LOWER KABETE LIBRARY

products and services from outside the firm. Organisations can also share business data, catalogues, or mail messages through such systems.

ERP forms the technology backbone for the entire company, which connects every layer of the business and helps build business relationships. From supply chain management to sales force automation, to customer self-service and e-commerce, every business operation needs to integrate seamlessly into their enterprise resource system. A fully integrated system ensures that managers, customers, partners, employees, and vendors have the information they need when they need it most.

ERPs create new efficiencies and new relationships between an organisation, its customers, and suppliers, redefining their organisational boundaries. For example, Chrysler Corporation, USA, has incorporated information systems in its operations for strategic advantage through networking and enterprise resource planning. The Chrysler Corporation is networked to suppliers, such as the Budd Company of Rochester, Michigan. Through the electronic link, the Budd Company monitors Chrysler production and ships sheet metal parts exactly when needed preceded by an electronic shipping notice. Chrysler and its suppliers have thus become linked business partners with mutually shared responsibilities. The Chrysler system links the company to its customers, distributors, and suppliers automating the flow of information across organisational boundaries (O'Brien, 1999).

### 2.3.3 Increased productivity and timeliness

ERPs provide organisations with capabilities to manage processes that cut across many business boundaries. ERPs promise benefits from increased efficiency to improved quality, productivity and profitability. For example, improved order entry allows immediate access to inventory, product data, customer credit history, and prior order information. This raises productivity and increases customer satisfaction. For example, ERP helped Master Product Company increase sales by 20 percent and decrease inventory by 30 per cent (O'Brien, 1999). Colgate-Palmolive, implemented SAP R/3 ERP and led to global efficiencies in purchasing, product and packaging standardisation, and timely access to accurate data. The system produced large savings in terms of reduced operating costs and quick access to customers.

O'Brien (1999) further notes that:

- Before ERP, it took Colgate US one to five days to acquire an order and another one to two days to process the order. Now (with the ERP) order acquisition and processing combined takes four hours.
- Distribution planning and picking used to take up to four days. Today it takes 14 hours. In total, order-to-delivery time has been cut in half.
- Before ERP, on-time deliveries used to occur only 91.5 % of the time but after the R/3 this shot up to 97.5%, not withstanding the fact that it takes less time.
- After the ERP, domestic inventories have dropped by one-third and receivables outstanding have dropped to 22.4 days from 31.4.

O'Brien (1999) also gives an interesting view of how powerful ERPs can be strategically significant. Product managers at Frito-Lay Corporation, the world's largest manufacturer of salty snack foods, can know within hours know precisely how many bags of Fritos have sold on any street in America at its customers' stores, how much they sold for, and what the competitions sales volumes and prices are.

### 2.3.4 Competitive advantage with ERP Systems

According to O'Brien (1999), ERP companies can achieve competitive advantage from the way they implement the systems and exploit the resulting data. The systems can make them quicker in the marketplace than companies with hard to change custom programs.

Vendors provide user support and maintenance for most of the packages. One of the biggest advantages of packaged applications like ERPs is that as the state of the art moves, you move with it, says Martin Riche, director of the ERP competence centre at Boeing Commercial Airplane Group, in Seattle. With applications like ERPs, companies can concentrate on their core business such as making Boeing 777s. Bob Towner, SAP project manager for financial systems at Deere & Co., Illinois, points out that simply having the systems is a competitive advantage because it gives a company a foundation to run its business and then concentrate on grabbing market share. SAP R/3 allows a global company such as Deere to standardise the business processes in its far-flung operations (O'Brien, 1999).

## 2.4 Challenges of ERPs

A number of challenges to effective implementation and use of ERPs have been documented. These include:

### 2.4.1 Interconnections/ Integration problems

Enterprise resource planning creates many interconnections among various business processes and data flows to ensure that any other unit of the organisation can obtain information in one part of the business. Information that was previously maintained by different departments must be integrated and made available to the company as a whole. Business processes must be tightly integrated, jobs redefined and new procedures created throughout the company. The whole process of change is challenging and employees are often unprepared for new procedures and roles (Laudon, 2000).

Integration of existing stand-alone information systems with ERPs is a major problem for many organisations. While client/server and open systems solve some technical difficulties, there are still problems of integrating different types of data and procedures used by functional areas. Also, there is an issue of information sharing, which may contradict existing practices and culture (O'Brien, 1999).

Coleman (2001) captures the key problems in his article "ERP integration options":

> "The problem of integrating ERP applications is as old as ERP itself. Not long after ERP suites first debuted in the early 1990s—touted panaceas for corporate integration woes--companies have struggled to improve the level of integration between their ERP packages and other applications such as legacy systems and e-commerce sites."

### 2.4.2 Technological complexity

ERPs are built on new powerful technologies that require very different skill sets than do legacy systems. Most large organisations still require use of large scale, main frame legacy systems. Managers find it very challenging to manage the technological complexity of different platforms and to harness the technological power of new enterprise technology. ERP implementation is so complex that it has proven to be too difficult for many organisations (O'Brien, 1999).

### 2.4.3 Lack of proper ERP management

Most managers are trained to manage a product line, a division, or an office. They are rarely trained to optimise the performance of the organisation as a whole. But enterprise systems require managers to take a much larger view of their own behaviour, to include other products, divisions, departments and even outside business firms. ERPs must be developed and implemented over time guided by a shared vision of objectives. For many firms, it is very difficult to develop a shared, enterprise wide vision of the firm to guide systems implementation (Laudon, 2000).

### 2.4.4 Cost of technology

ERP systems are generally expensive to purchase and implement in organisations. The move to ERP is a project of breath taking scope and the prices quoted are enough to make any financial manager twitchy. In addition to budgeting for software costs, financial executives should plan to write cheques to cover consulting, process rework, integration testing and a long laundry list of other expenses before the benefits of ERP start to

manifest. The projects have a reputation of draining corporate resources and funds given the massive resources required (Slater, 1998).

### 2.4.5 Security concerns

Some of the ERPs empower customers to log onto the system and carry out transactions. Empowering customers to enter into a corporate database can make customers happy, since they get quick answers to the queries and can save money for a company. But it may raise security concerns. The systems may not have adequate security measures that can minimise occasions of hacking given the complexity of the system (O'Brien, 2002).

### 2.4.6 Organisational change

ERP implementation is not just a software project but an organisational change project. The projects call for co-operation, teamwork, and planning for organisational change are difficult to do when senior management is too busy to give the project adequate attention. Installing ERPs successfully is not an easy task because of the major changes to a company's business processes required by ERP software. The projects bring about massive organisational changes as they consist of many functional modules that can span the whole organisation and yet share a database. Because departments are part of a larger organisation, they are forced to share systems and act not as independent units but act as a larger organisation, requiring a whole new understanding of their work (O'Brien, 1999).

### 2.4.7 Staff layoffs

The introduction of any new technology may result in massive staff layoffs and morale problems. The integration of departments leads to reduced need for many staff to man operation hence leading to staff layoffs. The company may lack resources to compensate employees over their job lose. Therefore, managers must anticipate resistance to ERPs, especially when combined to business process reengineering (BPR) (Laudon, 2000).

### 2.4.8 Product quality and vendor unreliability

Although ERP systems are becoming increasingly similar in functionality, they are still different in their quality, ease of implementation and vendor support. The stability of the current release of the program may not be guaranteed. System developers are changing hardware platforms, sometimes operating systems and database platforms, and other times overall system architecture. One vendor may have several versions of the same system. It may also mean that the version you want to buy is brand new, leading edge, but unstable, prone to crashing, and full of bugs (Munguti, 2001).

## 2.5 ERPs Implementation in Kenya

Opiyo (1999) notes that the computer industry in Kenya is one of the fastest growing economic sectors in Kenya. He notes that of the specialised mission critical systems, banking systems dominate and are closely followed by Enterprise Resource Planning (ERP) systems installed in major manufacturing organisations mainly from SAP Corporation.

The author further points out that the current depressed economy has, indirectly had a positive impact on the computer software sector, as many business decision makers have come to realise that IT within their organisations greatly improves their work processes.

Among the successful implementations of ERPs in Kenya is the case of Kenya Power and Lighting Company (KPLC). KPLC went live in July of 1997 with SAP R/3 functionality for accounting, materials management, and human resources. The company implemented the system in phases between 1996 and 1998.

In 2001, Bidco Oil Refineries, manufacturer and marketer of edible oils, fats and soaps implemented **iBaan Sales** and **iBaan Procurement** to help the manufacturer drive online sales and enable strategic procurement solutions. This was the first iBaan implementation in sub-Saharan Africa. The iBaan solutions helps Bidco staff, suppliers and customers throughout Africa to process sales, pricing and financial information online, and has helped the company to significantly reduce strategic procurement costs.

In Kenya different studies have been done focussing on different aspects of information systems. Kipngetich (1991) studied management satisfaction with information systems, Gatune(1993) studied the factors considered important in implementing local area networks. Nyambane (1996) studied the evaluation of the extent of and factors limiting information technology usage in publicly quoted companies in Kenya while Ochieng (1998) studied the factors considered important in the implementation of information systems. Ndung'u (2000) looked into the challenges facing Internet growth in Kenya and

Nyambati (2001) studied information technology planning practices in Kenyan banks. Munguti (2001) in his study of ERP and RDBMS, strategic developments in information technology pointed out that in Kenya, SAP R3 (an ERP system) has been implemented by a number of companies but did not identify challenges the companies have faced in the ERP implementation and use.

There are substantial steps toward planning and implementation of information systems that support business operations in Kenya. For instance, Nyambati (2001) found out that 25 out of 28 of the commercial banks in Kenya studied had plans in place for information systems acquisitions, which are updated regularly and which are business oriented. One can deduce that some of these plans could involve ERP implementations. Ndungú (2000) brought out the various challenges facing Internet growth in Kenya. However, none of the researchers have explicitly focussed on the enterprise resource planning systems.

# CHAPTER 3

# RESEARCH METHODOLOGY

## 3.1 Introduction

The objectives of the study were to evaluate challenges of ERPs implementation in the Kenyan market. This chapter describes the research design of the study and specifically looks at the population of the study, data collection and analysis methods.

## 3.2 Population of the study

The population of the study consisted of all companies that had implemented ERP systems in Kenya by March 2002 and also the ERP product vendors that had been involved in the implementation process. By the time of the study, twenty-eight (28) companies in Kenya were identified to have implemented ERPs from various vendors. There were eight (8) vendors/ resellers that had been involved in the implementation process. The thirty-six (36) companies identified formed the focus of the study. A list of these companies is provided in Appendix I and II.

## 3.3 Data Collection Methods

It was necessary to collect primary and secondary data that were relevant for the research. Primary data was collected from companies that had implemented ERPs as well as from the vendors using two questionnaires (one addressed to IT managers of companies that had implemented ERPs and the other addressed to managers of the vendors/ resellers companies). The questionnaires consisted of both open-ended and closed-ended questions. Open-ended questions were used to collect qualitative data which required the



UNIVERSITY OF NAIROBI
MOWER KABETE LIBRARY

opinion of the respondents for example on the successes and failures they had encountered during and after implementation of the ERP systems or the desirable features they would want included in the ERPs.

On the other hand, closed-ended questions were used to obtain quantitative data which covered a range of factors considered important for the research.

The questionnaires were developed with due consideration of the published literature on the area of study. Prior to administering of the questionnaires to respondents, the questionnaires were distributed (pre-tested with) to colleagues at work and friends undertaking MBA at University of Nairobi who provided useful suggestions especially on appropriateness, structure and relevance of the questionnaires for the study. Their suggestions were incorporated into the final version of the questionnaires that were sent out to respondents. Sample questionnaires are provided in appendix III and IV.

The questionnaires were mainly hand delivered to respondents by the researcher or his assistants and filled as they waited or picked later as the situation demanded. Some respondents requested to fill the questionnaires on soft copy thus the questionnaires were emailed to them and they forwarded back the filled copies. On a number of occasions, the researcher assisted the respondents to fill in the questionnaires and this provided a good opportunity to clarify some of the issues that may not have been clear to the respondents.

It was necessary to use relevant secondary data especially from published sources to supplement the primary data. The data was collected from vendor publications, newspapers, the Internet and other sources.

## 3.4 Data Analysis and Presentation

The data collected was tabulated and analysed using averages and percentages. Findings were analysed and presented using tables and charts for ease of interpretation to show where most responses featured and in the process help make conclusions on the factors focussed in the research.

The questionnaire to companies that had implemented ERPs had 19 factors while the questionnaire to vendors carried 10 factors, which were considered as important indicators of the challenges of ERPs implementation. The responses were captured in a likert scale and factor analysis conducted using Statistical Package for the Social Sciences (SPSS package).

# CHAPTER 4

# DATA ANALYSIS AND PRESENTATION OF FINDINGS

## 4.1 Introduction

A total of 36 questionnaires were distributed for the two sets of respondents targeted, that is, the companies that had implemented ERPs and the vendors of the ERP systems in Kenya. Of the questionnaires distributed 28 were for the companies that had implemented ERPs and 8 for vendors of ERPs in Kenya. A total of 22 out of 28 (85%) questionnaires to companies that had implemented ERPs were received while 6 out of 8 (75%) were received from the vendors of ERPs in Kenya.

## 4.2 Summary of Reponses from the Companies

The companies that had implemented the ERPs were grouped into four main categories, that is, industrial and allied, finance and investment, commercial and services, and agricultural. 50% of the respondents were from industrial and allied, followed closely by commercial and services with a 41% representation.

On ownership of the companies that responded, 55% of the respondents were jointly owned, 32% wholly locally owned, and 14% wholly foreign owned. This underscores the fact that companies had implemented ERPs were both locally and foreign owned implying that the need for the ERPs was not only felt by foreign companies but local ones as well. Table 4-1 gives a summary of the responses as per the categories.

**Table 4-1: Summary of responses of companies by sector**

| CATEGORY | Responses | No. of questionnaires distributed | Response rate per sector | Response rate across the sectors |
|---|---|---|---|---|
| Industrial & allied | 11 | 14 | 79% | 50% |
| Finance & investment | 1 | 2 | 50% | 5% |
| Commercial & services | 9 | 10 | 90% | 41% |
| Agricultural | 1 | 2 | 50% | 5% |
| **Total** | 22 | | | **100%** |

*(Source: Research Data)*

### 4.2.1 Number of branches and workforce

ERPs facilitate work collaboration for large companies with many branches and large work forces. It was important to find out how many branches the companies had and of these how many had the ERP systems implemented. There were varied responses especially on the branches in which the ERP system had been implemented ranging from only the head office to all branches. Majority (59%) of the companies that responded had one to five branches with a workforce of more than 200 staff.

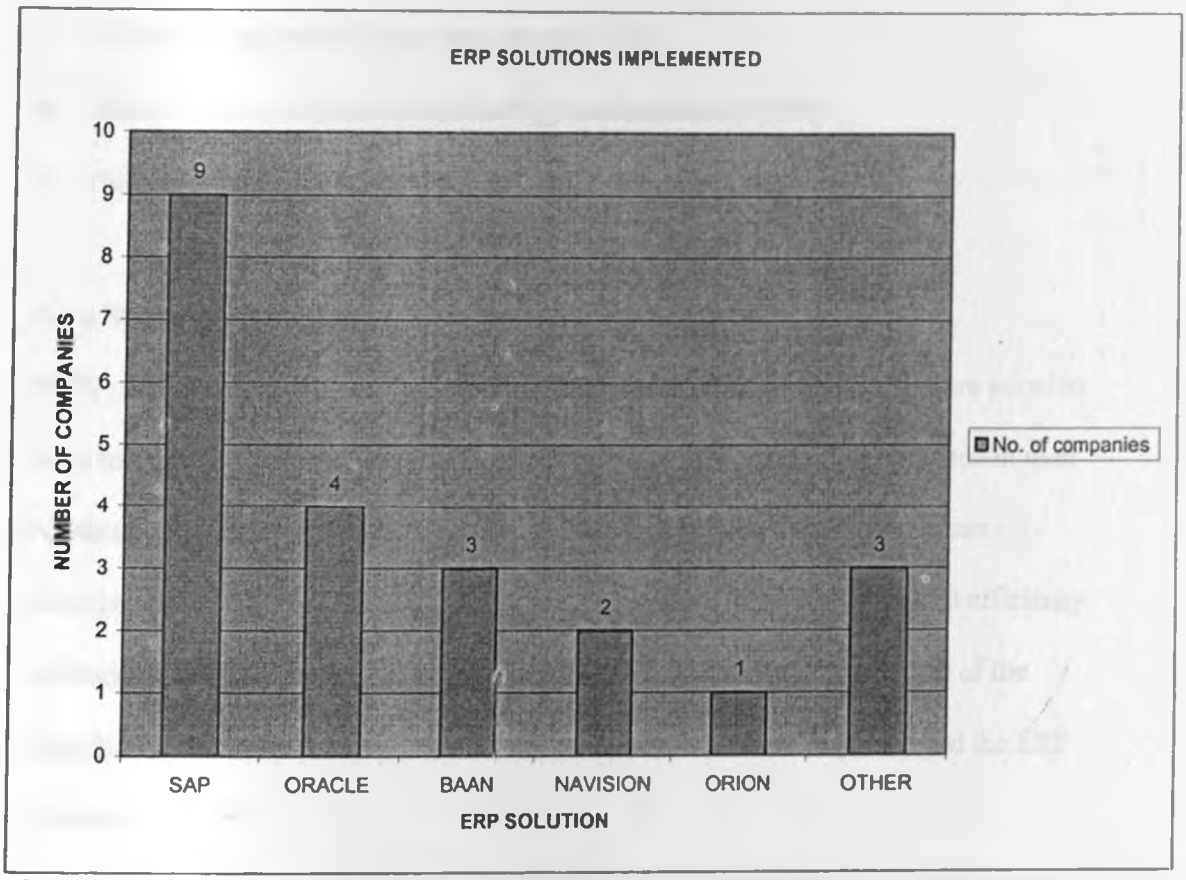
### 4.2.2 ERP Solution implementation

The study found out that 45% of the ERPs in Kenya were implemented between 1999 and 2000. 23% were implemented between 1997 and 1998 while 32% were implemented between 2001 and 2002. There seems a marked growth in implementations over the years as companies may be realising the benefits of ERPs hence the continued growth in number of companies implementing the systems.

The most common of the ERP solutions implemented was found to be from SAP. 41% of the ERP solutions implemented indicated that they use SAP followed by 18% who use Oracle financials. BAAN represented 14%, Navision 9% and ORION 5%. 14% of the companies also use other ERP solutions that were slowly entering the Kenyan market, for example, Sage line 500, Impact Encore, and Job Definition Format (JDF) systems a product of ScenicSoft inc., USA.

Companies have implemented a number of modules of the ERP systems. The financial and accounting module was found to be the most popular and most critical of the ERP modules implemented with all respondents (100%) indicating that they had the module in their system. The materials management module with a 73% response closely followed the accounting module in terms of popularity. The materials management module was popular with the companies in the industrial and allied sector because they needed a good system to manage their raw materials, work-in-progress and finished goods inventory. Other modules had the following responses: distribution (59%), human resource (27%), administration (23%), and asset management (9%). However, it should be noted that companies are different and have different needs for ERPs.

**Figure 4-1: Frequency distribution graph of the ERP solutions implemented**




*(Source: Research Data)*

### 4.2.3 Justification for ERP implementation

On the justification of implementation of the ERPs, respondents were asked to rank a number of factors identified as being the presumed reasons for implementation of the ERP systems. A great majority of respondents either agreed or strongly agreed with the reasons identified as justification for the implementation of the ERP system in their companies. Most respondents seemed to agree that their main reasons for implementing the ERP system were:

- The system's criticality to operations (68%).
- Overwhelming benefits from the system (59%).
- World trends in information technology and businesses (59%)
- The need to manage better the information resource (55%).

**4.2.4 Successes gained since implementation of the ERPs**

ERPs may have a variety of benefits to the companies. Thus, respondents were asked to state some of the benefits they have derived from the ERP system implemented in their organisations. There were varied responses but many indicated that information management in their organisations had improved greatly; there was increased efficiency of workers and reduced cost of doing business. Below is a summary of some of the benefits identified by the respondents from companies that have implemented the ERP systems:

i. **Information management:** Good information management for all the company processes resulting in more accurate and faster decision making with company-wide availability of timely, reliable information that is easily retrieved.

ii. **Increased efficiency:** Increased worker productivity and morale due to online transactions and timely deliveries. There is also increased efficiency in processing of transactions. This translates to better customer service and increased returns.

iii. **Integration of company systems:** Better integration of the applications used within the company and also the business processes leading to improved reliability

and availability of the system. The systems lead to greater ability to adapt to changing technology and installation of a secure access rights authorisations.

iv. **Reduced costs of business:** Low operational costs, which translate to increased profits, reduced cost of operation, reduction in staff and a drop in paper work.

### 4.2.5 Shortcomings companies have identified with the ERP systems

While ERPs may have a number of benefits to companies, they equally have shortcomings. Therefore, respondents were asked to identify the major shortcomings they had encountered with the ERP systems. The common problems of the current ERP systems identified by the respondents are summarised below:

**Problems with the system**

Inability of the system to perform multi-tasking/programming roles effectively and efficiently. Some of the system do not allow for many tasks to be undertaken concurrently allowing only single access.

**Problems with users**

- Reluctance to change among some managers with fear of being unable to control the implementation costs which are often high.
- The process of learning by users is quite slow. Many have to be trained/re-trained on how to use the system.

- Lack of proper match between the user requirements and the ERPs not done. The system is implemented without due consideration of user needs thus leading to resistance to the system by users.

**Problems companies have with vendors of the ERPs**

- The cost of vendor service and consultancy too high.
- Implementation period takes long and sometimes this delays company activities.
- Lack of technical know-how within local vendors. They sometimes have to seek support from abroad thus delaying solution provision.
- Delays in support provided by local vendors- they take too long to sort out user problems
- After sales service not adequate from most vendors.

### 4.2.6 Features that users desire to be included in a good ERP system

Many users may desire to have some features in a good ERP system. In this connection respondents were asked to identify the features that they would want to be included in the ERP systems and identified the following:

i. **System Interface:** A system interface that is more user friendly, interoperable with most Graphical User Interface (GUI) technologies and other applications such as spreadsheets.

ii. **Functionality:** A system with effective and efficient multi-user facility with a flexible and easy to use report generation tools – report writers.

iii. **Add-on facilities:** Internet enabled system to allow interaction with other partners e.g. customers and suppliers with ability to handle multi-currency transactions. The system should have a report generator tool that enables users to develop customised reports as per their needs.

iv. **System security:** Due to the system's expansive nature and many users, good data security with enhanced security features for log-on, access to the system resources and an efficient system audit are desirable.

### 4.2.7 Analysis of the Challenges of ERP Implementation for Companies

From the literature review, the researcher identified 19 factors that could be used to assess the challenges that Kenyan companies faced in ERP implementation. The factors are listed below:

**FACTORS TO ASSESS CHALLENGES COMPANIES FACE IN ERP IMPLEMENTATION**

1. Cost of system too high
2. Integration of different of types data a big problem
3. Process of file conversion too involving
4. ERP system too complex
5. Users not well trained to use the system
6. The system led to major organisational changes
7. System led to many staff layoff
8. Security of the system easily compromised
9. Vendors are very unreliable
10. Vendors do not provide adequate training to users
11. System took too long to be operational
12. Benefits of systems not recognisable
13. There were many problems during file conversion
14. Resistance to the system was high
15. Not enough time to implement the system
16. Employees inadequately prepared for new system
17. ERP incompatible with functional systems
18. Customisation of ERP to organisational needs took too long
19. Quality of ERP not to standard

The factors were included in the questionnaire and respondents were asked to state the extent they disagreed or agreed with the statements in a likert scale of 1-strongly

disagree, 2- Disagree, 3- Indifferent, 4-Agree and 5-Strongly agree. The factors were analysed using SPSS.

Principal Components Analysis (PCA) was performed on the respondents' scores. The 19 factors or components were extracted and the communalities achieved are shown in table 4-2.

**Table 4-2: Communalities (companies)**

Extraction Method: Principal Component Analysis.

| | Initial | Extraction |
|---|---|---|
| **VAR1** | 1.000 | .912 |
| **VAR2** | 1.000 | .916 |
| **VAR3** | 1.000 | .871 |
| **VAR4** | 1.000 | .896 |
| **VAR5** | 1.000 | .779 |
| **VAR6** | 1.000 | .787 |
| **VAR7** | 1.000 | .886 |
| **VAR8** | 1.000 | .827 |
| **VAR9** | 1.000 | .797 |
| **VAR10** | 1.000 | .752 |
| **VAR11** | 1.000 | .614 |
| **VAR12** | 1.000 | .875 |
| **VAR13** | 1.000 | .798 |
| **VAR14** | 1.000 | .792 |
| **VAR15** | 1.000 | .725 |
| **VAR16** | 1.000 | .732 |
| **VAR17** | 1.000 | .791 |
| **VAR18** | 1.000 | .761 |
| **VAR19** | 1.000 | .805 |

*Source: Research data*

Communality refers to the proportion of variance of a particular item that is due to common factors (shared with other items). It expresses the proportion of variance that is

extracted or accounted for by the factors. As shown in table 4-2, most of the variations in the variables were captured with the lowest variation being 61% for variable 11.

**Table 4-3: Total Variance Explained (companies)**

Extraction Method: Principal Component Analysis.

| | Initial Eigen values | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| Variable | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.261 | 22.425 | 22.425 | 4.261 | 22.425 | 22.425 | 2.951 | 15.534 | 15.534 |
| 2 | 2.558 | 13.463 | 35.889 | 2.558 | 13.463 | 35.889 | 2.455 | 12.921 | 28.455 |
| 3 | 2.357 | 12.404 | 48.292 | 2.357 | 12.404 | 48.292 | 2.177 | 11.460 | 39.914 |
| 4 | 1.837 | 9.668 | 57.961 | 1.837 | 9.668 | 57.961 | 2.111 | 11.108 | 51.023 |
| 5 | 1.626 | 8.557 | 66.517 | 1.626 | 8.557 | 66.517 | 1.935 | 10.184 | 61.206 |
| 6 | 1.529 | 8.045 | 74.562 | 1.529 | 8.045 | 74.562 | 1.866 | 9.822 | 71.028 |
| 7 | 1.150 | 6.052 | 80.614 | 1.150 | 6.052 | 80.614 | 1.821 | 9.586 | 80.614 |
| 8 | .954 | 5.021 | 85.636 | | | | | | |
| 9 | .687 | 3.614 | 89.249 | | | | | | |
| 10 | .539 | 2.836 | 92.085 | | | | | | |
| 11 | .508 | 2.676 | 94.760 | | | | | | |
| 12 | .343 | 1.805 | 96.565 | | | | | | |
| 13 | .280 | 1.475 | 98.041 | | | | | | |
| 14 | .164 | .864 | 98.905 | | | | | | |
| 15 | 9.494E-02 | .500 | 99.405 | | | | | | |
| 16 | 6.519E-02 | .343 | 99.748 | | | | | | |
| 17 | 4.562E-02 | .240 | 99.988 | | | | | | |
| 18 | 2.049E-03 | 1.078E-02 | 99.999 | | | | | | |
| 19 | 2.180E-04 | 1.147E-03 | 100.000 | | | | | | |

*Source: Research data*

Table 4-3 shows the total variance explained for each of the extracted factors. Each factor accounts for a decreasing proportion of variance subject to the condition that it is uncorrelated to all previous factors. For a factor to account for at least one variable, it

should have an eigen value of at least 1. This serves as a cut-off point for determining the number of factors to be extracted.

From table 4-3 figures, variable 1 accounts for 22.4% of the total observed variation, factor 2 explains 13.5% of the total variation, and so on. The seven-factor (cumulative) solution explained 80.6% of the total observed variation.

**Table 4-4: Rotated Component Matrix (companies)**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

| | Component | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| VAR1 | .918 | .130 | -5.494E-02 | -7.055E-03 | .110 | .145 | -.131 |
| VAR2 | -.923 | -.105 | 6.359E-02 | 3.743E-02 | -9.313E-02 | -.151 | .130 |
| VAR3 | .147 | 3.317E-02 | .122 | -6.615E-02 | 7.116E-02 | .908 | 7.711E-03 |
| VAR4 | .121 | .850 | .259 | -8.570E-02 | 8.676E-02 | -.186 | .204 |
| VAR5 | -2.536E-02 | 3.777E-02 | 1.326E-02 | .849 | 8.816E-02 | .122 | -.186 |
| VAR6 | .267 | .267 | -.661 | -.315 | .113 | 6.656E-02 | .302 |
| VAR7 | -8.132E-02 | .105 | -9.461E-02 | 8.555E-03 | 2.329E-02 | -3.430E-02 | .926 |
| VAR8 | 9.885E-02 | -.245 | .110 | 7.017E-02 | .846 | .114 | .108 |
| VAR9 | -2.336E-02 | .765 | -5.137E-02 | .247 | -5.582E-02 | .330 | .189 |
| VAR10 | .448 | .578 | -.330 | -.265 | 1.914E-02 | -3.834E-02 | -.188 |
| VAR11 | .206 | .497 | -8.530E-02 | -.379 | -.263 | .258 | -.194 |
| VAR12 | .257 | .239 | -7.293E-02 | .382 | .542 | .554 | -2.230E-02 |
| VAR13 | -.534 | -9.647E-02 | .622 | 2.204E-02 | -.126 | .242 | -.206 |
| VAR14 | .397 | 8.099E-02 | .524 | .504 | -7.962E-02 | -.303 | 3.202E-02 |
| VAR15 | .161 | .447 | -.168 | -.114 | .650 | -1.180E-02 | -.188 |
| VAR16 | -.482 | -4.726E-03 | -3.087E-02 | -.214 | .497 | -.426 | -.161 |
| VAR17 | -9.649E-02 | -.282 | .168 | .629 | -.285 | -.107 | .431 |
| VAR18 | -.337 | .138 | .257 | -.372 | -.113 | .301 | .566 |
| VAR19 | 1.089E-02 | .148 | .849 | -7.027E-02 | .113 | .115 | .175 |

*Source: Research data*



UNIVERSITY OF NAMIBIA
LOWER KABETE LIBRARY

Table 4-4 shows the results of orthogonal varimax rotation with Kaiser Normalisation done on the initial factor matrix. From the results, variable 1 loads heavily on factor 1. Variables 4, 9, 10, 11 load heavily on factor 2. A summary of factor loadings is shown:

**Table 4-5: Summary of loadings (companies)**

| Factor | Variable(s) |
|---|---|
| 1 | 1 |
| 2 | 4,9,10,11 |
| 3 | 13,14,19 |
| 4 | 5,17 |
| 5 | 8,15,16 |
| 6 | 3,12 |
| 7 | 2,6,7,18 |

The statements that make up the various factors are listed in table 4-6.

**Table 4-6: Statements from the loadings (companies)**

| Factor | Statement |
|---|---|
| 1 | • Cost of the system is too high |
| 2 | • ERP system too complex<br>• Vendors are very unreliable<br>• Vendors do not provide adequate training to users<br>• System took too long to be operational |
| 3 | • Quality of ERP not standard<br>• There were many problems during file conversion<br>• Resistance to the system was high |
| 4 | • Users not well trained to use the system<br>• ERP incompatible with functional systems |
| 5 | • Security of the system easily compromised<br>• Not enough to time to implement the system<br>• Employees inadequately prepared for new system |
| 6 | • Process of file conversion too involving<br>• Benefits of the system not recognisable |
| 7 | • System led to many staff layoffs<br>• Integration of different types of data a big problem<br>• System led to many organisational changes<br>• Customisation of ERP to organisational needs took too long |

**Conclusions of analysis of challenges companies face in ERP implementation**

From the 19 statements, we conclude that the following factors have been given a lot of weight from respondents as being major challenges in ERPs implementation and use:

- Cost of the system is too high
- The ERP systems are too complex to implement
- ERPs are incompatible with functional systems
- Vendors do not provide adequate training to users
- Employees are inadequately prepared for new system
- The process of file conversion is too involving
- The ERP system led to many organisational changes

## 4.3 SUMMARY OF REPONSES FROM VENDORS

Eight questionnaires were distributed and a total of six (75%) were returned. Of the companies that responded half are wholly locally owned while the other half are fully foreign owned with both categories having a workforce 20 to 40 staff.

### 4.3.1 ERPs the vendors implement

The vendors implemented a cross section of ERP solutions ranging from SAP, Oracle financials to others like Sage line 500. Of the vendors that responded, 38% implement Oracle Financials, followed closely at SAP (25%), BAAN, Navision and ORION all equally had 13%.

Vendors indicated that the Financial and accounting module is the most popular with 100% of respondents indicating they were implementing the module. Vendors also considered the accounting module as being critical to company operations.

### 4.3.2 Cost of ERPs

When asked on their assessment of various costs of the ERP systems, 67% of vendors indicated that purchase of the software was too high while they considered costs for hardware purchase and consultancy as being average. Vendors also considered costs of training and maintenance to be low as compared to those for software purchase.

### 4.3.3 Problems encountered by vendors of ERPs in Kenya

Vendors identified a number of problems they have encountered while implementing ERPs in Kenya. These include:

- Costs of the system are high for many companies thus putting off many potential buyers of the systems.
- Inadequacy in resources e.g. funds thus delaying the implementation process.
- Poor IT skills among users of the system in the companies.
- Poor change management among implementing companies with users not ready for change and minimal management support in the systems implementation process.
- Inadequate training time allocated to ERPs implementation. Companies always in a rush to see the project completed without due respect to work that has to be done.
- Data migration from existing systems very involving, some times incompatible with the new systems.

### 4.3.4 Analysis of the Challenges facing vendors in Kenya

The researcher identified 10 factors from the literature review that could be considered as major challenges to the vendors in the ERPs implementation.

**FACTORS TO ASSESS CHALLENGES VENDORS FACE IN ERP IMPLEMENTATION**

1. Cost of system too high
2. Integration of data a big problem
3. System too complex
4. Users not well trained to use the system
5. System leads to major organisational changes
6. System leads to many staff layoff
7. Security of the system easily compromised
8. Vendors are very unreliable
9. Implementers offer inadequate training to users
10. Many modules of the system are under utilised

The factors were included in the questionnaire and respondents were asked to state the extent they disagreed or agreed with the statements in a likert scale of 1-strongly disagree, 2- Disagree 3- Indifferent, 4-Agree and 5-Strongly agree.

Principal Component Analysis (PCA) was done on the collected data and the communalities obtained are shown in table 4-7:

**Table 4-7: Communalities (vendors)**

Extraction Method: Principal Component Analysis.

| | Initial | Extraction |
|---|---|---|
| **VAR1** | 1.000 | .944 |
| **VAR2** | 1.000 | .946 |
| **VAR3** | 1.000 | .913 |
| **VAR4** | 1.000 | .688 |
| **VAR5** | 1.000 | .982 |
| **VAR6** | 1.000 | .987 |
| **VAR7** | 1.000 | .950 |
| **VAR8** | 1.000 | .878 |
| **VAR9** | 1.000 | .974 |
| **VAR10** | 1.000 | .945 |

*Source: Research data*

From table 4-7, most of the variations in the variables were captured with the highest variance of 98.7% explaining variable 6 and the lowest variance of 68.8% of the variance of explaining variable 4.

**Table 4-8: Total Variance Explained (vendors)**

Extraction Method: Principal Component Analysis.

| | Initial Eigen values | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| Variable | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.465 | 34.650 | 34.650 | 3.465 | 34.650 | 34.650 | 3.328 | 33.275 | 33.275 |
| 2 | 2.372 | 23.723 | 58.373 | 2.372 | 23.723 | 58.373 | 2.361 | 23.607 | 56.882 |
| 3 | 1.918 | 19.178 | 77.551 | 1.918 | 19.178 | 77.551 | 1.890 | 18.896 | 75.777 |
| 4 | 1.450 | 14.502 | 92.053 | 1.450 | 14.502 | 92.053 | 1.628 | 16.276 | 92.053 |
| 5 | .519 | 5.189 | 97.242 | | | | | | |
| 6 | .185 | 1.852 | 99.094 | | | | | | |
| 7 | 9.056E-02 | .906 | 100.000 | | | | | | |
| 8 | 9.191E-17 | 9.191E-16 | 100.000 | | | | | | |
| 9 | -9.044E-17 | -9.044E-16 | 100.000 | | | | | | |
| 10 | -2.574E-16 | -2.574E-15 | 100.000 | | | | | | |

*Source: Research data*

From the figures in the table 4-8, factor 1 accounts for 34.6% of the total observed variation, factor 2 explains 23.7% of the total variation, and so on. The four-factor solution (cumulative) explained 92% of the total observed variation.

**Table 4-9: Rotated Component Matrix (vendors)**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalisation.

| | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **VAR1** | .170 | -.920 | -5.718E-02 | -.256 |
| **VAR2** | -.721 | .142 | .487 | .411 |
| **VAR3** | .912 | 6.067E-02 | .260 | .103 |
| **VAR4** | -.750 | .344 | 8.434E-03 | 8.590E-02 |
| **VAR5** | 8.624E-02 | 8.450E-03 | -1.927E-03 | .987 |
| **VAR6** | .525 | -4.249E-02 | .805 | .247 |
| **VAR7** | .205 | -6.000E-02 | -.937 | .161 |
| **VAR8** | .622 | .667 | -7.248E-02 | .202 |
| **VAR9** | -.820 | -.373 | .217 | -.339 |
| **VAR10** | 1.647E-02 | .885 | 5.146E-02 | -.398 |

*Source: Research data*

The table above shows the results of orthogonal varimax rotation with Kaiser Normalisation done on the initial factor matrix. From the results, variables 1, 3, and 7 load heavily on factor 1. Variables 4, 8, and 10 load heavily on factor 2. A summary of factor loadings is shown in table 4-10:

**Table 4-10: Summary of factor loadings (vendors)**

| Factor | Variable(s) |
|---|---|
| 1 | 1,3,7 |
| 2 | 4,8,10 |
| 3 | 2,6,9 |
| 4 | 5 |

The statements that make up the various factors are summarised below.

**Table 4-11: Statements from the loadings (vendors)**

| Factor | Statement |
|---|---|
| 1 | • Cost of system too high<br>• System too complex<br>• Security of the system easily compromised |
| 2 | • Users not well trained to use the system<br>• Vendors are very unreliable<br>• Many modules of the system are under utilised |
| 3 | • Integration of data a big problem<br>• System leads to many staff layoff<br>• Implementers offer inadequate training to users |
| 4 | • System leads to major organisational changes |

**Conclusions of analysis of challenges vendors face in ERP implementation**

From the 10 statements, the following factors have been given a lot of weight from respondents as being major challenges that vendors that have implemented ERPs have faced:

- Cost of system is too high
- The system was too complex for many users
- Users were not well trained to use the system
- Integration of data with existing functional systems a big problem
- The ERP system led to major organisational changes

# CHAPTER 5

# SUMMARY AND CONCLUSIONS

This chapter covers the conclusions that can be drawn from the analysed data, recommendations, the limitations of the study, and areas that need further research.

## 5.1 Conclusions

### 5.1.1 Companies responses

The following conclusions can be drawn from the factor analysis done on the responses from companies that have implemented ERPs.

- Cost is a major impediment to the implementation and use of ERPs. Both the companies that were surveyed and vendors alluded to this fact. The cost of ERPs implementation averages between Kshs. 100 to 500 million.
- The ERPs are too complex for most users and thus users need to be trained adequately on how to use them. The implementation of ERPs is quite an involving exercise that calls for co-operation between the vendors, the project teams and the management.
- Vendors seem unreliable, as they do not provide users with adequate training on the use of the system. This leads to the system taking too long to be operational.
- The quality of some ERP systems is not to standard hence not giving many users the desired results as they are inflexible and lack some functionality.
- Resistance to the system is often high especially for users who are not adequately prepared for the change from the functional legacy systems to the new ERP system.

- The implementation of the system takes too long (1-2 years). Thus many companies implementing the systems do it in a hurry. In the process vendors do not make the effort to implement a fully functional system that does not have bugs.
- The implementation of the systems leads to many organisational changes. For example, some employees may be laid off and there may be change of structure.
- ERPs must be customised to organisational needs and this sometimes takes long.
- Integration of different types of data from different functional systems poses a big challenge of incompatibility in data.

### 5.1.2 Vendor Responses

Vendors who are the suppliers of the various ERP solutions also face the following challenges:

- Companies implementing ERPs take too long to pay up for the systems, as the capital required is quite high and not many companies can afford the costs within the period of implementation.
- Companies find the system too complex for their operations thus taking too long to appreciate the value of the systems.
- Staff in companies are never fully prepared for the change to the new system.
- Time offered for user training is inadequate thus many employees may not be well trained on the use of the system.

- Some of the companies implementing ERPs have data in systems that are incompatible with the new system hence problems of migration from the old systems to the new ERP system.

**Conclusion**

ERPs are good systems that offer a number of benefits to users. Organisations implementing ERPs and vendors need to think about the challenges identified in this research so as to make the best utilisation of the systems for the good of business.

Despite the challenges, some companies have successfully implemented ERP systems. The techniques of overcoming the identified challenges are beyond the scope of this paper and need to be addressed by future researchers in this area.

## 5.2 Recommendations

It is apparent from the research that both the companies that have implemented ERP systems and the vendors of ERP products in Kenya face diverse challenges. Based on the findings and conclusions from this study, it is the researchers view that the following recommendations will serve as useful guide to both the companies that aspire to reap benefits from ERPs and the vendors of such products to achieve successful implementation and use of ERP system.

**Cost**

It will be important for vendors to look for ways of selling to customers products that are affordable. Much of the cost is as a result of the fact that many of the local vendors are involved in reselling ERP products from overseas which tend to be expensive. They could negotiate with the developers of the software for price reduction and upon which they can charge lesser fees for the software licences. The vendors should also charge reasonable fees for implementation and maintenance of the systems.

**Quality of the product**

Users of the ERP products have identified a number of limitations with the current software in the market. It would be prudent on the developers of the systems to incorporate some of the features recommended by the users of the ERPs such as a good user interface, and additional functionality would be useful to enhance the saleability of the ERP products.

**Cooperation between users, management and vendors**

For effective implementation and use of the systems, there is need for close cooperation between the users of the systems, management and the vendors so that the system being implemented is done for the user who knows what the system does. Management must cooperate with vendors by providing adequate time, funding and necessary support during the implementation process.

Vendors as well as management must be reliable to meet their obligations in the contracts to avoid scenarios where ERP projects stall because of lack funds or because of lack of support from management.

**Project appraisal**

Management must appreciate that ERP projects consume a lot of funds in addition to company time. Thus they need to budget adequately to have adequate funds to undertake the ERP implementation projects effectively. The projects must be justified and evaluated appropriately to see the benefits of the new system to the business and not just implemented because other companies are implementing similar systems.

## 5.3 Limitations of the Study

The use of the findings of this study can only be undertaken with due consideration of the following limitations:

- Some respondents refused to participate in the study by not responding to questionnaires sent to them. Even the companies that had implemented ERPs and vendors of ERP products that responded to the questionnaires were not willing to provide vital information in areas such as the actual cost of the systems. It was therefore difficult to make informed opinion on the cost of implementing ERPs, which was considered a critical challenge.
- Self-assessment bias. There is the tendency of respondents to protect their self-image through providing inaccurate information. Therefore, some of the information provided by the respondents on such areas such as the benefits they

derive from the ERPs, their criticality to their operations, failures they have encountered with the systems, may have been answered subjectively and thus not a true representation of reality.

- The time available to complete the study was short and therefore it was not possible to personally guide all respondents in filling in the questionnaires. This made some respondents to give irrelevant and sometimes inconsistent information. It was clear from some returned questionnaires that they were hurriedly filled in.

## 5.4 Suggestions for Further Research

ERP systems, like most other information systems, are still undergoing evolution and are subject to future studies from different dimensions. Future researchers may find it necessary to look into the following areas:

- Research into the individual ERP modules and assessment of their viability in the Kenyan market to identify the benefits of various ERPs in the Kenyan market.
- Research into management of ERPs in organisations with the aim of identifying any specific returns, whether the systems really add value to the businesses.
- Other researches may be carried out to assess the performance of Customer Relationship Management (CRM) systems, which have lately become the focus of many organisations concerned with growth of their businesses through good customer care.
- This study may also be replicated after some time to find out any new challenges given that the information technology field is fast changing.

## 6.0 REFERENCES


Akumu, W.: "Microsoft's Sh. 105b bride boosts operations" The Daily Nation 14.5.2002 Business Week pg 7.

Coleman, P.: "ERP Implementation options" http://www.intermec.com/erp/erp_

Davenport, T.J.: Process Innovation: reengineering Work through information Technology. Boston, Harvard Business School Press, 1993.

Davenport T.J.: "Putting the Enterprise into Enterprise systems" Harvard Business Review July-August 1998.

Dizon, O.: Evaluation of Feasibility of IT projects by publicly Quoted companies in Kenya. Unpublished MBA Project, University of Nairobi, July 1999.

Earls, A.: "ERPs and Integration" http://eai.ebizq.net/erp/earls_1.html

Gatune, J.: Factors considered important in implementing local area networks. Unpublished MBA project, University of Nairobi, July 1993

Khamadi, S. I.: Using the library and writing research proposals. Egerton University Press, 1991.

Kipngetich, J.: Management Satisfaction with Performance of Computer mediated Information Systems: The case of clients of Selected Computer Vendors. Unpublished MBA Project, University of Nairobi, June 1991.

Laudon, K. & Laudon, J.: Management Information Systems: Organisation and technology in a networked enterprise. 6th ed. New Jersey, Prentice Hall, 2000.

Lucey, T.: Management Information Systems. 8th ed. London, DP Publications, 1998.

Munguti, A.: ERP and RDBMS, Strategic Developments in Information Technology. Unpublished paper Baraton University,2001

Ndungú, Margaret: Challenges facing Internet Growth in Kenya. Unpublished MBA Project, University of Nairobi, October, 2000.

Nyambane, T.: An evaluation of the extent of and factors limiting information technology usage in publicly quoted companies in Kenya. Unpublished MBA Project, University of Nairobi, July 1996.

Nyambati, Richard N.: Information Technology Planning practices in Kenya. Unpublished MBA Project, University of Nairobi, September, 2001.

O'Brien, J.: Management Information Systems: a Managerial End User perspective .3rd ed, Boston, McGraw Hill-Irwin inc, 1997.

O'Brien, J.: Management Information Systems: Managing Information Technology in the Internetworked Enterprise. 4th Ed. Boston, McGraw Hill-Irwin inc, 1999.

O'Brien, J.: Management Information Systems: Managing Information Technology in the E-Business Enterprise. 5th Ed. Boston, McGraw Hill-Irwin inc, 2002.

Opiyo, V.: "Industry Analysis: IT Sector in Kenya" http://www.tradeport.org/ts/countries

Slater, D.: "The Hidden costs of Enterprise software." http:// www.cio.com

Turban, E, McLean, E. & Wetherbe, J.: Information Technology for Management. 2nd ed. John Wiley & Sons, 1999.

Wachira, A. M.: Ergonomic Factors Considered In Information Systems Implemented In Kenya – A Case of Firms in Nairobi. Unpublished MBA Project, University of Nairobi, March 2000.

# APPENDICES

## APPENDIX I: COMPANIES THAT HAVE IMPLEMENTED ERPs IN KENYA

| | Company | ERP product |
|---|---|---|
| 1. | Kenya Power and Lighting Company (KPLC) | SAP |
| 2. | KenGen | SAP |
| 3. | BAMBURI Cement | SAP |
| 4. | Cadbury's Kenya Ltd | SAP |
| 5. | Nation Media Group | SAP |
| 6. | PTA Bank | SAP |
| 7. | Mobil | SAP |
| 8. | Orbit Chemicals | SAP |
| 9. | Caltex Kenya Ltd | SAP |
| 10. | Kenya Ports Authority (KPA) | SAP |
| 11. | Kobil Petrolium Ltd | Oracle Financials |
| 12. | Kenya Shell/ BP | JDF Systems |
| 13. | Kenya Commercial Bank (KCB) | Oracle Financials |
| 14. | Kencell Communications Ltd. | Oracle Financials |
| 15. | Twiga Chemicals | Oracle Financials |
| 16. | MUMIAS SUGAR | Oracle Financials |
| 17. | Daystar University | Navision Financials |
| 18. | Farmers Choice | Navision Financials |
| 19. | Nairobi Airport Services | Navision Financials |
| 20. | KenChic Ltd | Navision Financials |
| 21. | Associated Batteries Manufacturers Ltd | Navision Financials |
| 22. | Hotpoint Appliances Ltd | ORION |
| 23. | Treadsetters Tyres Ltd | ORION |

| | | |
|---|---|---|
| 24. | Safaricom Kenya Limited | BAAN |
| 25. | Bidco Kenya Ltd | BAAN |
| 26. | Unga Group | BAAN |
| 27. | Firestone (E.A) | BAAN |
| 28. | HighChem E. A. Ltd | Impact Encore |

**APPENDIX II: ERPs vendors in Kenya**

| | **Vendor** | **Product** |
|---|---|---|
| 1. | Software Technologies Ltd | Oracle Financials |
| 2. | Simba Technologies Ltd. | Oracle Financials/Orion |
| 3. | SAP Kenya | SAP |
| 4. | Symphony Ltd | SAP/BAAN |
| 5. | Software Applications Ltd. | SAP |
| 6. | Fintech K. Ltd. | Oracle Financials |
| 7. | Copy Cat (K) Ltd. | Oracle Financials/SAP |
| 8. | Carl bro (K) Ltd. | Navision |

## APPENDIX III: INTRODUCTORY FOR QUESTIONNAIRES

Clement M. Nyandiere
Faculty of Commerce
University of Nairobi,
P. O. Box 30197,
NAIROBI
06.06.2002

**Email: cnyandiere@strathmore.edu**

**To the respondent**

Dear Sir/Madam

**RE: QUESTIONNAIRE**

I am a student in the Faculty of Commerce, University of Nairobi pursuing a course leading to a degree of Master of Business Administration (MBA). In partial fulfilment of the requirements of the course, I am conducting a study entitled AN INVESTIGATION OF THE CHALLENGES FACING ENTERPRISE RESOURCE PLANNING (ERP) SYSTEMS IMPLEMENTATION IN KENYA.

Your firm has been selected to form part of this study. Towards this end I kindly request for your assistance in completing the questionnaire attached. The information requested is needed for academic purposes only and will be treated in strict confidence.

Your co-operation will be highly appreciated. Thank you.

Yours faithfully,

C M Nyandiere
**MBA Student**

J T Kariuki
**Supervisor**

## APPENDIX IV: QUESTIONNAIRE TO COMPANIES THAT HAVE IMPLEMENTED ERPs IN KENYA

1. a) Name of company .....(optional)

   b) Industry/ sector *(please tick where appropriate)*
   - ❑ Industrial & allied
   - ❑ Finance & investment
   - ❑ Commercial & services
   - ❑ Agricultural

   Other (state) .....

   c)Please indicate the ownership of the company
   - Wholly foreign owned ❑
   - Wholly locally owned ❑
   - Jointly owned ❑

   Other (state) .....

   d) Number of branches the company has:
   - 1-5 ❑
   - 6-10 ❑
   - 11-15 ❑
   - Over 15 ❑

   Of these branches, how many have you implemented the ERP system?.....

   e) Number of company employees
   - 1-50 ❑
   - 51-100 ❑
   - 101-150 ❑
   - 151-200 ❑
   - Over 200 ❑

   f) Turnover (per year) .....

2. What ERP solution has the company implemented?
   - ❑ SAP
   - ❑ ORACLE FINANCIALS
   - ❑ BAAN
   - ❑ NAVISION
   - ❑ ORION

   Other (please state) .....

3. When was the ERP implemented *(please indicate the year)* .....
   Name of vendor .....

4. a) Actual cost of the ERP system purchase Ksh.....
   Could you please provide actual costs for the following items?

| Item | Cost |
|---|---|
| Purchase of software costs | |
| Purchase of hardware costs | |
| Training costs | |
| Maintenance costs (per year) | |
| Consultancy fee | |

   b) Did you enter maintenance contract with vendor? Yes ❑ No ❑
   c) If YES, what is the cost of maintenance? Ksh. ..... per year
   If NO, how is the system maintained?

.....

.....

   d) How long did the implementation process take?.....months

5. Given that ERPs constitute many modules, what modules has your company implemented?
   - ❑ Materials management
   - ❑ Human Resources
   - ❑ Administration
   - ❑ Financial and accounting
   - ❑ Distribution

   Others ..... .....

6. What conversion strategy did you use? *(Please tick in appropriate box)*

| | |
|---|---|
| Direct | ❑ |
| Parallel | ❑ |
| Phased | ❑ |
| Pilot | ❑ |

Any specific reason for the choice of conversion strategy?.....

7. How would you rate the following ERP modules to the company's operations?

*(Please tick in appropriate box)*

| Module | Very critical | Critical | Necessary | Non critical | Not necessary |
|---|---|---|---|---|---|
| Materials management | ❑ | ❑ | ❑ | ❑ | ❑ |
| Human Resources | ❑ | ❑ | ❑ | ❑ | ❑ |
| Administration | ❑ | ❑ | ❑ | ❑ | ❑ |
| Financial | ❑ | ❑ | ❑ | ❑ | ❑ |
| Distribution | ❑ | ❑ | ❑ | ❑ | ❑ |
| | | | | | |

8. In your assessment of the ERP system, how would you rate the following factors *(please tick in appropriate box)*

| | Very Poor | Poor | Fair | Good | Very Good |
|---|---|---|---|---|---|
| User acceptance | ❑ | ❑ | ❑ | ❑ | ❑ |
| Benefits to users | ❑ | ❑ | ❑ | ❑ | ❑ |
| Technical capability | ❑ | ❑ | ❑ | ❑ | ❑ |
| Management approval | ❑ | ❑ | ❑ | ❑ | ❑ |
| Organisational integration | ❑ | ❑ | ❑ | ❑ | ❑ |
| Strategic advantage | ❑ | ❑ | ❑ | ❑ | ❑ |
| Other(state)..... | ❑ | ❑ | ❑ | ❑ | ❑ |

9. In the justification for implementation of the ERP, how would you rank the following reasons?( *Please tick in the scale below)*

| | Strongly disagree | Disagree | Indifferent | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Need to better manage information resource | ❑ | ❑ | ❑ | ❑ | ❑ |
| Support for competitive advantage | ❑ | ❑ | ❑ | ❑ | ❑ |
| Innovative ways of doing business | ❑ | ❑ | ❑ | ❑ | ❑ |
| Competitors had implemented similar system | ❑ | ❑ | ❑ | ❑ | ❑ |
| Industry/ World trends | ❑ | ❑ | ❑ | ❑ | ❑ |
| Customer demands | ❑ | ❑ | ❑ | ❑ | ❑ |
| Criticality to operations | ❑ | ❑ | ❑ | ❑ | ❑ |
| Overwhelming benefits from the system | ❑ | ❑ | ❑ | ❑ | ❑ |
| Other reasons (state)..... | ❑ | ❑ | ❑ | ❑ | ❑ |

10. In your assessment of costs, how would you rate the following: *(please tick where appropriate)*

| | Very Low | Low | Average | High | Very High |
|---|---|---|---|---|---|
| Purchase of software costs | ☐ | ☐ | ☐ | ☐ | ☐ |
| Purchase of hardware costs | ☐ | ☐ | ☐ | ☐ | ☐ |
| Change over costs | ☐ | ☐ | ☐ | ☐ | ☐ |
| File conversion | ☐ | ☐ | ☐ | ☐ | ☐ |
| Training | ☐ | ☐ | ☐ | ☐ | ☐ |
| Consultancy fee | ☐ | ☐ | ☐ | ☐ | ☐ |
| Maintenance costs | ☐ | ☐ | ☐ | ☐ | ☐ |

11. Of the benefits of ERPs that have been identified below, please indicate to what extent you agree or disagree with the statements. (*Please tick in the appropriate box)*

| **The system led to...** | Strongly disagree | Disagree | Indifferent | Agree | Strongly Agree |
|---|---|---|---|---|---|
| integration of functions hence improved management of the business | ☐ | ☐ | ☐ | ☐ | ☐ |
| improved information management | ☐ | ☐ | ☐ | ☐ | ☐ |
| access to information from all departments | ☐ | ☐ | ☐ | ☐ | ☐ |
| reduced costs of operation | ☐ | ☐ | ☐ | ☐ | ☐ |
| increased worker productivity | ☐ | ☐ | ☐ | ☐ | ☐ |
| competitive advantage over other companies | ☐ | ☐ | ☐ | ☐ | ☐ |
| good customer care | ☐ | ☐ | ☐ | ☐ | ☐ |
| improved materials management and distribution | ☐ | ☐ | ☐ | ☐ | ☐ |

12. List the major successes gained since implementation of the system?

.....
.....
.....
.....
.....
.....
.....

13. What are some of the features that you expect to be included in a good ERP system?

.....
.....

.....
.....
.....
.....
.....
.....

14. List major failures you have identified with the ERP system in your organisation

.....
.....
.....
.....
.....
.....

15. When you assess the ERP implementation and use in your organisation, how would you rate the following statements(*please tick in appropriate box your view- strongly disagree to strongly agree scale)*:

| | Strongly disagree | Disagree | Indifferent | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. Cost of system too high | ❑ | ❑ | ❑ | ❑ | ❑ |
| 2. Integration of different of types data a big problem | ❑ | ❑ | ❑ | ❑ | ❑ |
| 3. Process of file conversion too involving | ❑ | ❑ | ❑ | ❑ | ❑ |
| 4. ERP system too complex | ❑ | ❑ | ❑ | ❑ | ❑ |
| 5. Users not well trained to use the system | ❑ | ❑ | ❑ | ❑ | ❑ |
| 6. System led to major organisational changes | ❑ | ❑ | ❑ | ❑ | ❑ |
| 7. System led to many staff layoff | ❑ | ❑ | ❑ | ❑ | ❑ |
| 8. Security of the system easily compromised | ❑ | ❑ | ❑ | ❑ | ❑ |
| 9. Vendors are very unreliable | ❑ | ❑ | ❑ | ❑ | ❑ |
| 10. Vendors do not provide adequate training to users | ❑ | ❑ | ❑ | ❑ | ❑ |
| 11. System took too long to be operational | ❑ | ❑ | ❑ | ❑ | ❑ |
| 12. Benefits of systems not recognisable | ❑ | ❑ | ❑ | ❑ | ❑ |
| 13. There were many problems during file conversion | ❑ | ❑ | ❑ | ❑ | ❑ |
| 14. Resistance to the system was high | ❑ | ❑ | ❑ | ❑ | ❑ |
| 15. Not enough time to implement the system | ❑ | ❑ | ❑ | ❑ | ❑ |
| 16. Employees inadequately prepared for new system | ❑ | ❑ | ❑ | ❑ | ❑ |
| 17. ERP incompatible with functional systems | ❑ | ❑ | ❑ | ❑ | ❑ |
| 18. Customisation of ERP to organisational needs took too long | ❑ | ❑ | ❑ | ❑ | ❑ |
| 19. Quality of ERP not to standard | ❑ | ❑ | ❑ | ❑ | ❑ |

16. How would you rate the ERP in your organisation on the following indicators: (*please tick where appropriate*)?

| | VERY POOR | POOR | FAIR | GOOD | VERY OOD |
|---|---|---|---|---|---|
| Security features | ❑ | ❑ | | ❑ | ❑ |
| Functionality | ❑ | ❑ | | ❑ | ❑ |
| Integration with other systems | ❑ | ❑ | | ❑ | ❑ |
| User friendliness | ❑ | ❑ | | ❑ | ❑ |
| Expandability | ❑ | ❑ | | ❑ | ❑ |
| | | | | | |

17. List problems you have encountered with vendors of the ERP systems.

.....
.....
.....
.....
.....
.....
.....
.....

18. Any other comment with regard to ERP systems?

.....
.....
.....
.....
.....
.....
.....

Thank you.

## APPENDIX V:QUESTIONNAIRE TO ERPs VENDORS IN KENYA

1. a)Name of company .....(optional)
   b) Please indicate the ownership of the company
      - ❑ Wholly foreign owned
      - ❑ Wholly locally owned
      - ❑ Jointly owned

      Other (please state).....
   c) Number of company employees:

      1-10 ❑
      11-20 ❑
      21-30 ❑
      31-40 ❑
      Over 40 ❑

2. What ERP solution does your company implement?
   - ❑ SAP
   - ❑ ORACLE FINANCIALS
   - ❑ BAAN
   - ❑ NAVISION
   - ❑ ORION

   Other (please state) .....

3. a) Actual cost of system sale Ksh.....
   b) Could you please provide average costs for the following items?

| Item | Cost |
|---|---|
| Purchase of software costs | |
| Purchase of hardware costs | |
| Training costs | |
| Maintenance costs (per year) | |
| Consultancy fee | |

   c) How many ERP systems have you implemented in Kenya? .....

   d) For the systems that you implemented, did you enter maintenance contract?
      Yes ❑ No ❑

      If YES, what type of contract:

      One-off ❑ Regular ❑ Other (please state) .....

What was the duration of the contract?

| Organisation/ site | Duration (Months) |
|---|---|
| | |
| | |
| | |
| | |

e) Cost of maintenance? Ksh. ..... per year
f) How long do you take to implement any one system?.....months

4. Given that ERPs constitute many modules, what modules are most popular among many companies?
   - ❑ Materials management
   - ❑ Human Resources
   - ❑ Administration
   - ❑ Financial and accounting
   - ❑ Distribution

   Others .....

5. How would you rate the modules you implement for companies? *(Please tick in appropriate box)*

| Module | Very critical | Critical | Necessary | Non critical | Not necessary |
|---|---|---|---|---|---|
| Materials management | ❑ | ❑ | ❑ | ❑ | ❑ |
| Human Resources | ❑ | ❑ | ❑ | ❑ | ❑ |
| Administration | ❑ | ❑ | ❑ | ❑ | ❑ |
| Financial | ❑ | ❑ | ❑ | ❑ | ❑ |
| Distribution | ❑ | ❑ | ❑ | ❑ | ❑ |
| | | | | | |

6. In the ranking of the ERP system, how would you rate the following factors? *(Please tick in appropriate box)*

| | Very Poor | Poor | Fair | Good | Very Good |
|---|---|---|---|---|---|
| User acceptance | ❑ | ❑ | ❑ | ❑ | ❑ |
| Cost | ❑ | ❑ | ❑ | ❑ | ❑ |
| Technical capability | ❑ | ❑ | ❑ | ❑ | ❑ |
| Management approval | ❑ | ❑ | ❑ | ❑ | ❑ |
| Organisational integration | ❑ | ❑ | ❑ | ❑ | ❑ |
| Strategic advantage | ❑ | ❑ | ❑ | ❑ | ❑ |
| Other..... | ❑ | ❑ | ❑ | ❑ | ❑ |

7. In the company's justification for implementation of the ERP, how would you rank the following reasons? ( *Please tick where appropriate)*

| | 1- Strongly disagree | 2- Disagree | 3-Indifferent | 4- Agree | 5- Strongly Agree |
|---|---|---|---|---|---|
| Need to better manage information resource | ❑ | ❑ | ❑ | ❑ | ❑ |
| Support for competitive advantage | ❑ | ❑ | ❑ | ❑ | ❑ |
| Innovative ways of doing business | ❑ | ❑ | ❑ | ❑ | ❑ |
| Competitors had implemented similar system | ❑ | ❑ | ❑ | ❑ | ❑ |
| Industry/ World trends | ❑ | ❑ | ❑ | ❑ | ❑ |
| Customer demands | ❑ | ❑ | ❑ | ❑ | ❑ |
| Criticality to operations | ❑ | ❑ | ❑ | ❑ | ❑ |
| Overwhelming benefits from the system | ❑ | ❑ | ❑ | ❑ | ❑ |
| Other reasons (state)..... | ❑ | ❑ | ❑ | ❑ | ❑ |

8. In your assessment of costs relating to the system, how would you rate the following:

*(please tick where appropriate)*

| | Very Low | Low | Average | High | Very High |
|---|---|---|---|---|---|
| Purchase of software | ❑ | ❑ | ❑ | ❑ | ❑ |
| Purchase of hardware | ❑ | ❑ | ❑ | ❑ | ❑ |
| Change over | ❑ | ❑ | ❑ | ❑ | ❑ |
| File conversion | ❑ | ❑ | ❑ | ❑ | ❑ |
| Training | ❑ | ❑ | ❑ | ❑ | ❑ |
| Consultancy fee | ❑ | ❑ | ❑ | ❑ | ❑ |
| Maintenance cost | ❑ | ❑ | ❑ | ❑ | ❑ |

9. List major problems you have encountered in the implementation of the systems

.....
.....
.....
.....
.....
.....
.....
.....

10. Given the size of companies that have implemented ERPs and from your experience how would you rate the following statements from companies that have implemented the systems (*please tick in appropriate box your view- strongly disagree to strongly agree scale)*:

| | Strongly disagree | Disagree | Indifferent | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. Cost of system too high | ❑ | ❑ | ❑ | ❑ | ❑ |
| 2. Integration of data a big problem | ❑ | ❑ | ❑ | ❑ | ❑ |
| 3. System too complex | ❑ | ❑ | ❑ | ❑ | ❑ |
| 4. Users not well trained to use the system | ❑ | ❑ | ❑ | ❑ | ❑ |
| 5. System leads to major organisational changes | ❑ | ❑ | ❑ | ❑ | ❑ |
| 6. System leads to many staff layoff | ❑ | ❑ | ❑ | ❑ | ❑ |
| 7. Security of the system easily compromised | ❑ | ❑ | ❑ | ❑ | ❑ |
| 8. Vendors are very unreliable | ❑ | ❑ | ❑ | ❑ | ❑ |
| 9. Implementers offer inadequate training to users | ❑ | ❑ | ❑ | ❑ | ❑ |
| 10. Many modules of the system are under utilised | ❑ | ❑ | ❑ | ❑ | ❑ |

11. When you assess the problems of the ERP implementation, how would you rate the following statements relating to companies that have implemented the systems (*please tick in appropriate box your view- strongly disagree to strongly agree scale)*:

| **The organisations ...** | Strongly | Disagree | Indifferent | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. take long to pay up for the systems | ❑ | ❑ | ❑ | ❑ | ❑ |
| 2. have many demands on implementers | ❑ | ❑ | ❑ | ❑ | ❑ |
| 3. find the system too complex for their operations | ❑ | ❑ | ❑ | ❑ | ❑ |
| 4. do not honour contracts | ❑ | ❑ | ❑ | ❑ | ❑ |
| 5. users are not co-operative during implementation | ❑ | ❑ | ❑ | ❑ | ❑ |
| 6. managers are unreliable | ❑ | ❑ | ❑ | ❑ | ❑ |
| 7. users too long to appreciate the value of the systems | ❑ | ❑ | ❑ | ❑ | ❑ |
| 8. do not offer adequate time to train users of the system | ❑ | ❑ | ❑ | ❑ | ❑ |
| 9. employees do not co-operate with implementers | ❑ | ❑ | ❑ | ❑ | ❑ |
| 10. staff not prepared for the change to new system | ❑ | ❑ | ❑ | ❑ | ❑ |
| 11. organisations have data in systems that are incompatible with the new system | ❑ | ❑ | ❑ | ❑ | ❑ |

12. Any other comment on ERP systems

.....

.....

.....

Thank you.