

**EFFECT OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEMS ON
PERFORMANCE OF COUNTY GOVERNMENTS IN NORTH RIFT
ECONOMIC BLOC, KENYA**

BY

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DECLARATION

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I declare that this research thesis is my original work and that it has not been presented for a degree in any university.

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DEDICATION

This research project is dedicated to God for the strength he gave me to carry on and my family; husband, my children Loraine mwikali, faith mukami, hope karimi and yobel baraka, parents, sisters and brothers whose unflinching assistance throughout these periods has been invaluable. I also owe much gratitude to all my friends who participated and supported me.

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ABSTRACT

Devolution is a tool that brings government services closer to the people. Several countries are devolving functions having the intentions of improving service delivery, enhance governance, accountability and increase equity. However, Kenya devolution was found to be an ambitious program, counties are facing challenges in enhancing devolved service delivery. In addition, Despite the efforts by the National Government to improve adoption of information communication technology (ICT) projects at county level through Authority, adoption of Enterprise resource planning (ERP) projects at county level is yet to be implemented. Thus, the general objective of the study was to establish the effect of ERP systems on the performance of County governments in county governments in North Rift Economic Bloc (NOREB). The specific objectives of the study were to determine the effect of supply chain management (SCM) module on the performance of County governments, effect of customer relationship management (CRM) module on the performance of County governments, effect of human resources management (HR) module on the performance of County governments and effect of financial management (FM) module on the performance of County governments. The study was informed by Control Theory (Cybernetics) and Institutional Theory. The study employed explanatory. The study targeted 1,640 permanent employees from ICT and finance ministries from six counties in the North Rift region in Kenya. These included: Nandi, Uasin Gishu, Elgeyo Marakwet, Trans Nzoia, Baringo and West Pokot Counties. Simple random sampling techniques were used to select a representative sample of 321 employees from the six County governments. The study collected primary data using a structured questionnaire. To measure the reliability, the Cronbach Alpha technique was employed. The data was analyzed and presented using descriptive statistics such as mean scores and standard deviation to determine the distributions of the variables. In addition, to further determine the power of the study model, the study regressed the variables using multiple regression model. The findings in have showed that integration of ERP in the SC ($\beta_1 = 0.102$, $p = 0.015$), integration of the ERP system into the CRM module ($\beta_2 = 0.156$, $p = 0.004$), integration of the ERP system in the HRM module ($\beta_3 = 0.218$, $p < 0.001$) and integration of the ERP system in the FM module ($\beta_4 = 0.491$, $p < 0.001$) have a positive and significant effect on county performance, Thus, the study inferred that ERP in CRM, HRM, SCM and financial is key determinants in performance of county government. Therefore, the study recommends that all the departments in the organization that are yet to be integrated should be integrated to reap the benefits of integration. The study also recommends that all public organizations should adopt ERP with the aim of improving their efficiency.

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LIST OF ABBREVIATIONS

ERP	Enterprise resource planning
ICT	Information Communication Technology
AIS	Accounting Information System
IS	Information Systems
AICPA	American Institute of Certified Public Accountants
ABC	Activity Based Costing
PC	Personal Computer
ABB	Activity Based Budgeting
PLC	Product Lifecycle Costing
SPSS	Statistical Package for Social Sciences

OPERATIONAL DEFINITION OF TERMS

- Automation:** Refers to the use of computers to control a particular process in order to increase reliability and efficiency, often through the replacement of employees. For a manufacturer, this could entail using robotic assembly lines to manufacture a product.
- Business Processes:** Refers to a collection of linked tasks which find their end in the delivery of a service or product to a client. The process must involve clearly defined inputs and a single output. These inputs are made up of all of the factors which contribute (either directly or indirectly) to the added value of a service or product. These factors can be categorized into management processes, operational processes and supporting processes.
- Customer Relationship management Model** technology systems companies can engage to manage their external interactions with customers at all points during the customer lifecycle, from discovery to education, purchase, and post-purchase
- Electronic Resource Planning:** Is a process by which a company (often a manufacturer) manages and integrates the important parts of its business. An ERP management information system integrates areas such as planning, purchasing, inventory, sales, marketing, finance, human resources, etc
- Financial management Model** is the ERP system and processes an organization uses to manage assets, income and expenses.

Performance:

This refers to the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost, and speed.

Supply chain management Model is an ERP solution that takes care of physical aspects of supply that includes storage and transportation and the market aspect of effectively managing demand and supply to meet customer demands.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter focuses on the background of the study. It gives an outline of the problem statement, objectives, and the research questions. It also gives the scope and significance of the study.

1.2 Background of the Study

Performance is the focus of any business or organization and only through performance is organization able to grow and progress (Gavreaet *al.*, 2011). Similarly, the survival of a business is to accomplish set goals and objectives (Muduenyiet *al.*, 2015). According to Yazdanfar (2013), one of the important preconditions for long-term firm survival and success is firm profitability. Organizations today are constantly in search for ways to achieve better business performance and sustain competitive advantages through effective deployment of resources and business processes (Faizal, 2005). To improve business performance, organizations require an efficient planning and control system that synchronizes planning of all processes across the organization. Most organizations view their performance in terms of "effectiveness" in achieving their mission, purpose or goals. Most public organizations for example, would tend to link the larger notion of organizational performance to the results of their service delivery to the publics (Abdullateefet *al.*, 2013). At the same time, most organizations also see their

performance in terms of their "efficiency" in deploying resources. This relates to the optimal use of resources to obtain the results desired. Finally, in order for an organization to remain viable over time, it must be both "financially viable" and "relevant" to its stakeholders and their changing needs.

According to Baheshti(2011) ERP systems successfully enhance efficiency and improve overall performance of an organization upon adoption. Over the years, corporations have adopted new technology to integrate business activities in order to achieve both effectiveness and efficiency in their operations. In recent years, many firms locally and internally have invested on ERP systems in order to integrate all business activities into a uniform platform. The implementation of ERP system enables the firm to reduce the transaction costs of the business and improve its productivity, customer satisfaction and profitability. Maiyo (2016) in her study on the influence of Enterprise Resource Planning system in enhancing service delivery and performance of procurement function confirmed that ERP system played a key role.

In Maiyo (2016) study on the confirmed early finding of a research carried on Taiwanese IT firms. It also provides empirical evidence that the beneficial impacts of 2 ERP systems on the supply chain do lead to better overall supply chain management (SCM) and performance. It also confirmed that strategic IT planning leads to operational efficiency and better performance in any business. Benefits accrued from adaption of ERP systems can in turn enhance firm performance in the management its resources through the modules purchased especially financial accounting (FA), material management (MM)and project planning (PP)modules respectfully. According to Rashid at al. (2012) and a report

by United Nations (2016), private organizations have taken the lead in adoption of current technologies in management specifically they have embraced the use of ERP systems. Due to increasing global competition in a dynamic business setting, many project managers are now aware of the benefits of Enterprise Resource Planning (ERP) systems. While the internal and external environments are becoming more complex, project executives should consider appropriate ERP System modules to enhance efficiency and performance of funded projects as well as to gain potential competitive advantages in the industry. This can be from similar projects and emerging project trends. (Chang 2011)

The performance in most public sector in most African countries has for a long time been viewed by many observers as poor. They either suffer from managerial problems or are accused of poor service delivery (Scott, 2003). Their problems stem from unclear planning and conflicting roles, lack of well stated objectives, lack of autonomy and accountability, lack of motivation, and inadequate management information systems. As a result, the public sector in most countries, small or big, are going through profound restructuring, trying to provide improved services while at the same time having to drastically downsize in the face of major fiscal constraints (Faizal, 2005). A significant element of such reforms in the public sector is the initiatives underway to reform public administration, to reinvent government and its agencies to use a popular expression (Mayne and Zapico-Goni, 1997). The key to competitiveness lies in a solid information system (IS) infrastructure seamlessly aligned with core business processes developed for the delivery of high-quality products and services to customers within the optimal time. These demands have prompted more firms to shift their IS strategies from developing in-

house information systems to purchasing application software, such as ERP systems, to generate synergies and enhance operating efficiency, effectiveness and eventually profitability (Hong, and Kim, 2002; Arnold, 2006; Mandal and Gunasekaran, 2003).

This may suggest the need to establish whether the use of ERPs have positively affected the performance of the organization. In particular, it may be useful to establish if the intended effects have occurred given the reported failure rates in the literature. The literature indicates these projects as highly risky with a relatively low success rate ([Zhang et al., 2005](#)). For instance, [Magnusson et al. \(2004\)](#) report a rate of 90 percent, [Kovacic and Bosilj-Vuksic \(2005\)](#) report a 89-91 percent, [Martin \(1998\)](#), a 90 percent, [Umble and Umble \(2002\)](#) report a 50-75 percent, [Zhang et al. \(2003\)](#) report a 67-90 percent, [Sarkis and Sundarraj \(2003\)](#) report a two-third failure rate. While these studies report different failure rates, it is suggestive of the need to examine whether the effect of ERPs, on business processes of public organizations has been positive or not. Perhaps the findings on the impact of ERPs from research in previous work that has tended to focus on the factors that influence the success of ERPs, may not adequately explain their use and impact on business processes in the public organizations, such as county governments.

In Kenya, County Governments are taking ICT as an important tool for delivering services to citizens and businesses (Mokaya and Njuguna, 2013). There are few electronic governance systems, most focusing on revenue collection based on County governments Integrated Financial and Operations Management System (LAIFO MS), the system used by the County governments that preceded the creation of County Governments. Most Governments at this level have began developing County CT Master

Plans, which will need to be aligned to this National ICT Master Plan. At the ministry level, all departments have been mandated to use Integrated Financial Management Information System (IFMIS) (ICT Authority of Kenya, 2014). The ICT Authority is a State Corporation under the Ministry of Information Communication and Technology (MoICT) established in August 2013. The role of the ICT Authority in the county governance structure is to assist counties to achieve autonomy in their operations and service delivery to citizens through ICT. Some of the core functions of the county government include: promoting democratic and accountable exercise of power; fostering national unity by recognizing diversity; giving power of self-government to the people; and enhancing the participation of people in exercise of power of the state and making decisions affecting them. In order to deliver these functions, the county governments need to leverage ICT in service delivery to the citizens. The counties will need to take initiatives around: ICT institutionalization; capacity building; ICT infrastructure development; and ICT systems deployment (ICT Authority of Kenya, 2014).

According to the ICT Authority of Kenya (2014), all 47 County Governments are now in charge of overseeing some functions such as the provision of health care and maintenance of local roads which were previously the responsibility of Kenya's National Government. With the devolvement, ICT infrastructure and services are prerequisites to development in each County Government. Kenya's Commission on Revenue Allocation (CRA) which advises on revenue division between the National Government and the County Governments has already indicated that 84.5 percent of the revenues will be allocated to the National Government while 15 percent will be allocated to County Governments. The remaining 0.5 percent is designated as an equalization fund. Following

this emerging changes, it is imperative that the Kenya National ICT Master Plan for 2013/14-2017/18 considers the role of ICT not only at the National level, but at the County level and how the infrastructure and services can be integrated to better serve all the citizens (ICT Authority of Kenya, 2014)

1.2 Statement of Problem

County government performance deemed the vehicle for the execution of countries economic growth (Peter, 2005). In order to achieve set specific objectives, there need to be engagement of both external and external stakeholders (Mensah, 2013). The impact stakeholders can have on organizational policy, strategy, and project is dependent on their relationship to either the organization itself or the issues of concern, or both. In addition, for county government, community engagement is key for performance. The management of county government and the corresponding community, supplier's engagement signified a link between PPM and stakeholder's engagement (Shah and Naqvi, 2014). However, despite this county progress in Kenya, a few challenges in the projects are emerging and slowing the transition process. The county has been facing serious challenges in implementing their strategies and outing in the conditions required for the success of these strategies due to resistance from the community and other stakeholders. Some of the challenges facing the county include inadequate personnel with the required project management skills, inadequate financial resources, inefficient project planning, and the unengagement of the various project stakeholders among others.

In most institutions, Gwayo et al. (2014) noted, there is a growing concern regarding the reasons why the requisite objectives are not achieved as per the projects' client's

expectation. Muchung'u (2012) lamented that, some projects takes as many as 3 years before they are completed; a scenario that is usually accompanied by huge cost overruns. The foregoing has resulted in inevitable cost overruns, time overrun, idling resources, and also inconveniences to the targeted beneficiaries of such projects (Kikwasi, 2012). This is so due to the fact that, incomplete and/or unsuccessfully completed construction projects affect service delivery. Projects which have stalled or are unsuccessfully completed will negatively affect beneficiaries.

Despite the efforts by the National Government to improve adoption of ICT projects at county level through ICT Authority, adoption of ERP projects at county level has not been implemented fully yet. The UN survey for 2010 indicated that Kenya e-readiness index was 0.33, which is below the world average at 0.42 (UN, 2010, p.5). According to UN (2010) the poor ratings attributable to diminishing resources and lack of skilled labor underscore the need for Kenya to play a catch-up with the rest of the world. The result of readiness towards CTI adoption tumbles down to the county governments.

While research on ERPs has tended to focus on success factors in the context of manufacturing firms, not much has been documented on their effect on the performance of public organizations. It is not known whether the implementation of the ERP at county governments has affected positively or negatively on the business processes as no study has been undertaken in this respect. A need therefore exists for a study that can improve our understanding of the effect of ERP'in supply chain management module , customer relationship management module, human resources management module and financial

management module. The current study fills this gap by examining the effect of ERPs has on the performance county governments in NOREB.

1.3 Objectives of the Study

The general objective of the study was to establish the effect of ERP systems on the performance of County governments in NOREB.

1.3.1 Specific Objectives

The specific objectives of the study were:

1. To determine the effect of supply chain management module on the performance of County governments.
2. To determine the effect of customer relationship management module on the performance of County governments.
3. To determine the effect of human resources management module on the performance of County governments.
4. To establish the effect of financial management module on the performance of County governments.

1.4 Research Hypothesis

H₀₁: There is no significant effect of supply chain management module on the performance of County Governments.

H₀₂: There is no significant effect of customer relationship management module on the performance of County Governments.

H₀₃: There is no significant effect of human resources management module on the performance of County Governments.

H₀₄: There is no significant effect of financial management module on the performance of County Governments.

1.5 Significance of the Study

The results of the study on the effect of the use of an ERP in the County governments will be of significance to management, future researchers and government agencies. The management of the County Governments will benefit from insights about the effect on efficiency of transaction processing, customer service and service delivery. The study will reveal the perception of users of the significance of the ERP on their work and perhaps help management enhance the utility of the ERP. Moreover, the study will help management to gauge the extent of success in the implementation of ERP at the organization. Being an exploratory study, the findings will be of interest to researchers who intend to explore the effect of ERPs within the County governments in developing countries. The study will contribute to the body of literature on the use of ERPs by County governments which have only recently adopted ERPs. Perhaps it will shed light on the issues that need to be addressed in ensuring that ERP transform business processes in the desired direction in County governments.

Finally, owing to the importance of information systems in the quality of services offered by County governments, results from this study may assist relevant government

departments in providing the necessary policy and regulatory frameworks to enhance the use of such systems in management of County governments.

1.6 Scope of the Study

The focus of this study was on the effect of ERP implementation on the performance of the County governments in Kenya. The study utilized data collected from users of an ERP system at the County governments. The study was exploratory in nature and sought to establish ERP system in supply chain management module, customer relationship management module, human resources management module and financial management module. The use of a survey instrument enabled the researcher to explore the effect of ERP on the organization's business processes. Being exploratory, the study limited itself to exploring the success of ERPs within public sector by examining its effect on the performance of the county government. The study was carried for 3 months period in 2016.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature that is pertinent to the study. Included in the review are the concept of ERP systems and performance of organization/government. Effect of using an ERP in supply chain management module, customer relationship management module, human resources management module and financial management module on performance of county government. In addition, this chapter entails theoretical and conceptual frameworks.

2.2 The Concept of Organizational/Government Performance

Organizational performance is not the performance of an individual or a group but the net result of combined efforts of all individuals and groups in the organization. Organizational performance is a product of organizational design. The whole point of designing an organization is to improve its performance. Performance is important not only as a “dependant”, end-result-of-design variable but also as a change-initiating, “independent” variable (Selvarajan, 2007). The organization’s performance is made visible through the activities it conducts to achieve its mission. Outputs and their effects are the most observable aspects of an organization’s performance ((Fry et al., 2008)).

Performance is one of the most important constructs in management research. The definition of firm performance could vary from one and another. According to Richard et

al.(2009) organizational performance encompasses three specific areas of firm outcomes: financial performance (profits, return on assets, return on investment, etc.); product market performance (sales, market share, etc.); and shareholder return (total shareholder return, economic value added, etc.) On the other hand, firm performance can also be measured using perceived performance approach (also referred to as subjective performance measure) where Likert-like scaling is used to measure firm performance from the top management perspectives(Selvarajan, 2007).Organizational performance is a method of measuring the success of the organization to ensure that it achieves its goals. The success of an organization is gauged from several indicators both qualitative and quantitative (Fry et al., 2008). These include financial performance and non-financial performance. Performance measures may be cost-oriented or non-cost oriented and can be internal or external. Although organizational performance is the most extensively used dependent variable in organizational research, it still remains vague and loosely defined. Performance has been traditionally conceptualized in terms of financial measures; but some scholars have proposed a broader performance construct that incorporates non-financial measures including among others market share, product quality, and company image. .Under the circumstances, non-financial measures of performance have also been used to gauge the performance of a firm (Kaplan & Norton, 2009).

Performance measurement is the label given to routine measurement of program inputs, outputs, and/or outcomes undertaken by agencies within governments and the nonprofit sector to meet demands for documentation of program performance. During the last three decades of the 20th century a number of managers at all levels of government in countries around the world developed and implemented performance measurement

systems to address, demands that they document government performance. Several studies and indicators have become available in recent years to compare countries' public sectors. Not all of these indicators have been specifically developed to make this comparison but do contain elements related to public sector performance. A first study is the European Central Bank's working paper 'Public sector efficiency: an international comparison' (Afonso et al., 2003). One of the elements in the comparison, apart from comparing the performance of national public sectors from health, education and public infrastructure efficiency, was the performance and efficiency of the public administration. A second indicator is the Government Effectiveness indicator, which is part of the World Bank Governance Indicators dataset. This government effectiveness indicator is currently the most comprehensive indicator for assessing the performance of public administrations, even though the indicator is of a quite general and sometimes even vague nature. The indicator currently covers 213 countries or territories worldwide. It measures government effectiveness by looking at 'the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies' (Kaufmann et al., 2006)

2.2.1 Balanced Scorecard

In 1992, Kaplan and Norton developed the "Balanced Scorecard¹." The Balanced Scorecard was the result of a one-year study of 12 companies. The study, conducted by the KPMG Nolan Norton Institute, resulted in the Balanced Scorecard - a system that can be used to translate "...an organization's mission and strategic objectives...into a set of

performance measures” (Wongrassamee, Gardiner and Simmons, 2003). In a single report, the scorecard provides management with broad measures of business performance. The scorecard includes “...many of the seemingly disparate elements of a company’s competitive agenda: becoming customer oriented, shortening response time, improving quality, emphasizing teamwork, reducing new product launch times, and managing for the long term. Second, the scorecard guards against sub-optimization” (Kaplan and Norton, 1992).

Many organizations are today managing organizational performance using the balanced scorecard methodology where performance is tracked and measured. The Balanced Scorecard approach measures four specific areas of organizational performance from differing perspectives: (1) Customer Perspective, (2) Internal Perspective, (3) Innovation and Learning Perspective, and (4) Financial Perspective. They further extended the Balanced Scorecard approach by: (1) linking performance measures to business strategy, and (2) discussing means to map business strategy to performance measures. The Balanced Scorecard is intended to provide top managers a “...fast but comprehensive view of the business” (Kaplan and Norton, 2000).

A key goal of the scorecard is to communicate and help implement an organization’s strategy (Wongrassamee, Gardiner and Simmons, 2003). As shown in Figure 2.1, the Balanced Scorecard is intended to reflect an integrated set of cause and-effect relationships between outcomes (lag measures) and the critical drivers (lead measures) of those outcomes (Salterio, and Webb, 2003).

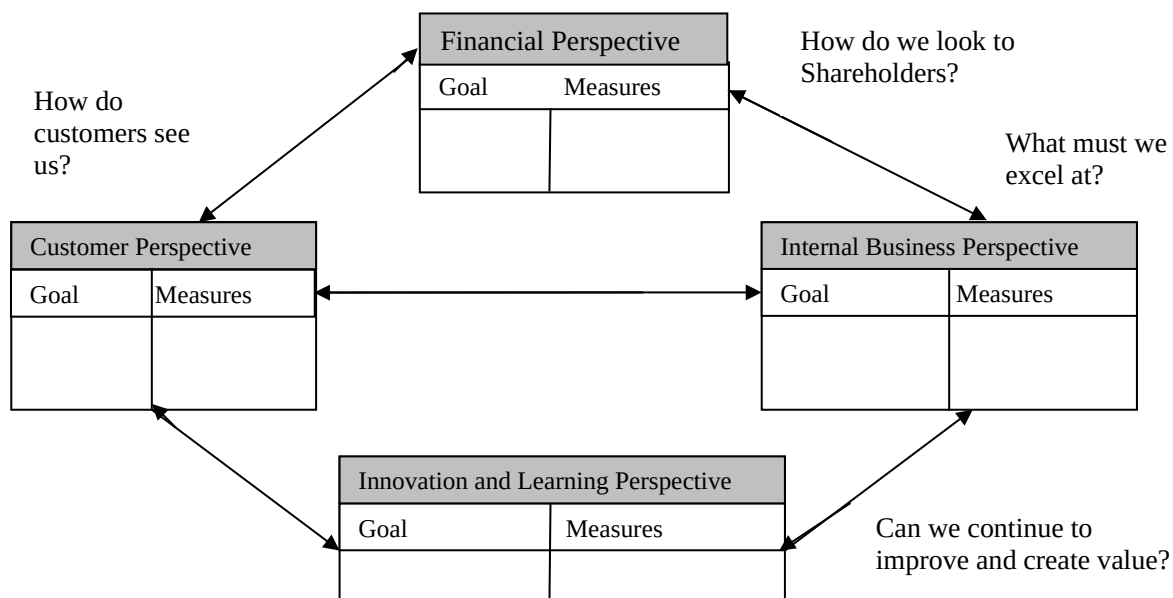


Figure 2.1: The Balanced Scorecard Links Performance Measures

Source: Kaplan and Norton (1992)

Kaplan and Norton's Balanced Scorecard attempt to link four distinct perspectives to measurement categories (Table 2.1). These four perspectives actually answer four important business questions, which when taken together, provide a comprehensive indicator of performance.

Table 2.1: The Balanced Scorecard links perspective to measurement categories

Perspective	Question	Business Process Measures
Customer	How do customers see us?	Time, quality, performance and service, and cost
Internal Business	What must we excel at?	Cycle time, quality, employee skills, and productivity
Innovation	Can we continue to improve and create value?	New product launches, customer value, and operating efficiency
Financial	How do we look to	Income, expenses, assets,

	Shareholders?	liabilities...
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2.2.2 Internal Business Processes

With increasing pressure to keep costs down, improve performance and service delivery, companies are looking for solutions that automate processes, standardize best practices, and improve efficiency. According to Verner (2004), businesses over the past decade have devoted increasing attention to business processes, their improvement, and their automation. This interest grows out of the need to streamline business operations, consolidate organizations, and reduce costs. Verner (2004) states, “The design and automation of business processes warrants its own field of study, known as business process management (BPM). BPM has emerged as a critical cross-discipline control and process enabler and is responsible for ensuring consistency in planning and performance management while reducing costs across the enterprise.

Better processes produce lower costs, motivated employees, and happier customers. This starts with examining how work is accomplished, documenting current processes, and then improving those processes. However, simply documenting your processes and relying on manual process implementation does not give your business managers real control over the process. Gartner indicates that by automating processes, without any process redesign or improvement, but by simply “making the current-state handoffs, timing, and responsibilities explicit, productivity improvements of more than 12 percent are normally realized.” Of course, this is just the beginning, as a basic tenant of process automation is its ability to facilitate process improvement (Gartner, 2005).

Continuous improvement is at the heart of process automation. The ability to have the information with which to continuously improve processes and gain incremental return on investment (ROI) on a consistent basis is a major benefit of process automation. A real benefit of process automation and management is the visibility and control of the business processes that is achieved. Process automation can activate the process; orchestrate the people, data, and documents involved in the process; and give managers visibility into how the process is operating, where the bottlenecks may be, and highlight possible process improvements. Process automation systems can capture and collect critical measurements or key performance indicators and make that data available to facilitate process optimization. With this data, business managers can then use any process improvement technique to optimize the process and feed those improvements back into the process automation tool, thus driving maximum performance and efficiency (Gartner, 2005).

2.3 Concept of Enterprise Resource Planning

Enterprise resource planning (ERP) system is a business management system that comprises integrated sets of comprehensive software, which can be used, when successfully implemented, to manage and integrate all the business functions within an organization. These sets usually include a set of mature business applications and tools for financial and cost accounting, sales and distribution, materials management, human resource, production planning and computer integrated manufacturing, supply chain, and customer information (Boykin, 2001; Chen, 2001; Yen *et al.*, 2002). These packages have the ability to facilitate the flow of information between all supply chain processes

(internal and external) in an organization (Al-Mashari and Zairi, 2000). Furthermore, an ERP system can be used as a tool to help improve the performance level of a supply chain network by helping to reduce cycle times (Gardiner *et al.*, 2002). However, it has traditionally been applied in capital-intensive industries such as manufacturing, construction, aerospace and defence. Recently, ERP systems have been expanded beyond manufacturing and introduced to the finance, health care, hotel chains, education, insurance, retail and telecommunications sectors.

ERP is now considered to be the price of entry for running a business, and at least at present, for being connected to other enterprises in a network economy to create “business to business” electronic commerce (Boykin, 2001). Furthermore, many multinationals restrict their business to only those companies that operate the same ERP software as the multinational firm. It is a fact that ERP is for big firms and smaller firms have to adjust their business model and approach according to the practices and software adopted by the big firms. With the opening up of the economy, small to medium sized enterprises (SMEs) have found the going very difficult. Since they do not have the robustness associated with large companies, SMEs have to tap the power of IT and an integrated information system to stay competitive and customer oriented. ERP is often considered the answer for their survival (Rao, 2000). Therefore, the ERP software market has become one of today’s largest IT investments worldwide. A recent survey predicts that the spending on ERP will reach \$66 billion in 2003 (Themistocleous *et al.*, 2001). It continues to be one of the largest, fastest growing and most influential players in the application software industry in the next decade (Adam and O’doherly, 2000; Yen *et al.*, 2002). There are several reasons why a continued growth of ERP projects is to be

expected (Stensrud, 2001): the ERP vendors are continuously expanding the capabilities of their packages by adding functionality for new business functions such as sales force automation, supply-chain, order management, data warehousing, maintenance repair-and-overhaul, etc, the ERP vendors are transitioning to Web-based applications, this may lead to faster flow of information in the logistics chain, and therefore, many ERP customers will require these Web-based ERP systems, the emergence of e-commerce will also increase the demand for Web-based ERP systems, the share of ERP systems in certain geographical markets such as the former Eastern Bloc, Asia and South America is not widespread.

ERP packages touch many aspects of a company's internal and external operations. Consequently, successful deployment and use of ERP systems are critical to organizational performance and survival (Markus *et al.*, 2000). Potential benefits include drastic declines in inventory, breakthrough reductions in working capital, abundant information about customer wants and needs, along with the ability to view and manage the extended enterprise of suppliers, alliances and customers as an integrated whole (Chen, 2001). In the manufacturing sector, ERP implementation has reduced inventories anywhere from 15 to 35 per cent (Gupta, 2000). Among the most important attributes of ERP (Nah *et al.*, 2001; Soh *et al.*, 2000) are its abilities to: automate and integrate business processes across organizational functions and locations; enable implementation of all variations of best business practices with a view towards enhancing productivity; share common data and practices across the entire enterprise in order to reduce errors; and produce and access information in a real-time environment to facilitate rapid and better decisions and cost reductions. ERP packages are attracting increasing attention

from both academic and industrial communities. No comprehensive review has been carried out on the development and implementation of ERP. A review of the recent development of ERP is needed to make decisions concerning ERP selection and implementation and to aid in guiding more research.

ERP allows companies to integrate various departmental information. It has evolved from a human resource management application to a tool that spans IT management. For many users, an ERP is a “do it all” system that performs everything from entry of sales orders to customer service. It attempts to integrate the suppliers and customers with the manufacturing environment of the organisation. For example, a purchase entered in the order module passes the order to a manufacturing application, which in turn sends a material request to the supply-chain module, which gets the necessary parts from suppliers and uses a logistics module to get them to the factory. At the same time the purchase transaction shows in general a ledger module as revenue. The traditional application systems, which organisations generally employ, treat each transaction separately. They are built around the strong boundaries of specific functions that a specific application is meant to cater for. ERP stops treating these transactions separately as standalone activities and considers them to be a part of interlinked processes that make up the business (Gupta, 2000).

The various modules of ERP include engineering data control (bill of materials, process plan and work centre data); sales, purchase and inventory (sales and distribution, inventory and purchase); material requirement planning (MRP); resource flow management (production scheduling, finance and human resources management); works

documentation (work order, shop order release, material issue release and route cards for parts and assemblies); shop floor control and management and others like costing, maintenance management, logistics management and MIS. Also, the model of ERP includes areas such as finance (financial accounting, treasury management, enterprise control and asset management), logistics (production planning, materials management, plant maintenance, quality management, project systems, sales and distribution), human resources (personnel management, training and development and skills inventory) and workflow (integrates the entire enterprise with flexible assignment of tasks and responsibilities to locations, positions, jobs, groups or individuals) (Siriginidi, 2000).

The results of studies such as those of Poston and Grabski (2000, 2001), Hunton *et al.* (2003) and Nicolaou (2004) suggest that the full effects of ERP adoptions for firms do not surface until after a considerable time-lag. Hence, studies such as Poston and Grabski (2000) that examine performance differences between adopting and non-adopting firms immediately following such adoption do not find any significant differences in the financial performance of adopting and non-adopting firms. On the other hand, studies that incorporate time-lags into their design such as Hunton *et al.* (2003) and Nicolaou (2004) appear to find greater evidence of such differences between ERP-adopting and non-adopting firms.

Prior literature on information technology investments suggests that strategic IT investment such as ERP give firms the ability to gain tangible and intangible benefits that help sustain operational efficiencies in the long run (Nicolaou, 2004; Kettinger *et al.*, 1994; Mata *et al.*, 1995). Furthermore, Nicolaou (2004) has shown that these

performance benefits typically accrue to ERP-adopting firms only after a lag of approximately 2 years from the date of original rollout. Professional literature also suggests that ERP implementations are typically not unitary and one-time events but involve a series of modular upgrades and enhancements to the original system (Holland and Light, 2001; Markus *et al.*, 2000; O’Leary, 2000). While changes in the form of upgrades and enhancements are well documented, evidence also suggests that such implementations sometimes go awry and are followed by somewhat less publicized events such as switches to other ERP vendors and/or even total abandonments of such systems. This, therefore, leads us to question whether the firm performance (non)-effects surfaced by earlier studies of ERP implementation sustain over periods over which these same firms undertake ERP revisions/changes.

The above scenarios suggest that the timing and nature of an observed ERP system change should significantly influence the strength of the original ERP system adoption effect. The combined influence of the ERP adoption along with the change events would therefore moderate a firm’s differential performance in the years following initial system implementation. As noted above, our expectation is that early changes – defined as occurring in the year of the adoption or in the year after representing rapid firm response to the perceived need for ERP changes. While early enhancements in the shape of upgrades and add-ons may be viewed positively as representing firms’ rapid and early movement toward cementing ERP-driven productivity and performance gains, later enhancements may be viewed more negatively (O’Leary, 2000). While it is certainly possible that such later enhancements serve as platforms for future modular growth, they may very well be indicative of a firms’ inability to make rapid positive transformations to

their installed ERP base. ERP switches/abandonments, whether early or late, represent pre-installation problems that manifest themselves in the post-implementation period. However, such changes initiated by firms within the year of installation or in the year after it (early changes) represent firm awareness of the problem and rapid reaction to it. Late switches/abandonments, on the other hand, represent situations whereby such firms appear incapable of stemming the effects of faulty ERP implementations until very late in the post-implementation period (O'Leary, 2000).

2.4 Theoretical Framework

2.4.1 Control Theory (Cybernetics)

The cybernetic control theory is also referred in multiple positivistic studies. According to Wier, Hunton and HassabElnaby (2007), cybernetic control theory provides explanation about the way ERP systems offer the means concerning the effectively use of non-financial performance indicators for managers. Cybernetic controls provide measures that enable quantification of an underlying phenomenon, activity or system, set standards of performance or targets to be met, provide feedback processes that enables comparison of the outcome of the activities with the standard, assess variance between goals and performances and modify the system's behavior or underlying activities (Elbashir, Collier and Sutton, 2011).

Furthermore, cybernetic control theory suggests that if a firm have to adapt and to survive in its environment, decision makers need to receive feedback on a timely basis to notice unexpected deviations and to act and to observe system responses. This theory asserts

that the potential effectiveness of ERP systems depends on the ability to capture, process, disperse and analyze performance measures on a timely basis (Weir et al., 2007).

2.4.2 Institutional Theory (Transaction Cost Economics)

Institutional theory asserts that the development of formal structures in firms can significantly be influenced by the institutional environment (Scott, 2014). For example, Ugrin (2009) incorporates institutional theory into ERP systems adoption in his study. Ugrin mentions that institutional theory suggests that a firm deals with uncertainty, look beyond traditional cost-benefit analyses and look also to institutional factors to legitimize their decisions. Ugrin examines the role of institutional factors in addition to traditional decision variables inexperienced managers' decisions whether or not to adopt ERP systems.

Transaction cost economics is an important concept of institutional theory and several studies pay attention to this concept. For example, Poston and Grabski (2001) use this theory to develop hypothesis regarding the examination of how ERP systems affect firm's transaction costs. According to them, "transaction cost economics posits that a firm is an economic entity created in an effort to economize on market transaction costs, for example searching and communicating market information, negotiating a deal, and preventing or dealing with contract default" (p. 278). Transaction costs are usually high when, for example, a firm has to deal with firm-specific assets and a long-term contract is necessary to prevent the opportunistic behavior of the other party (Williamson, 1981). Furthermore, Hyvönen (2003) mention that findings of previous studies indicate that ERP

systems are effective with regard to transaction processing and thus lead to a reduction of the transaction costs of operations.

2.5 Effect of ERP in Supply Management Module on Organization Performance

Integrating ERP into a supply chain management (SCM) department allows the organization to reduce its dependency on human effort and eliminates the need to maintain a number of scattered and distinct systems. The global success of enterprise resource planning has captured the interest of business, information technology, and information systems researchers. Companies have spent billions of dollars buying and implementing enterprise resource planning exploring the rationales for ERP and SCM integration. Nonetheless, companies have been able to achieve measurable, positive returns on ERP investments. But despite the many benefits of ERP–SCM integration, some companies are lagging behind for several reasons. This is mainly due to the initial investment to acquire and implement an ERP system. This investment is substantial and even after the system is up and running, the costs continue to mount (Business Intelligence Center 2012), this keeps many organizations from implementing ERP software.

Information system that integrates the ERP system to logistics chain provides a competitive advantage (Akkermans et al., 2003). ERP systems and SCM practices are the basis for organizational performance and ongoing competitive advantage. SCM provides effective tools for institutions and helps to meet the needs of suppliers and customers, and competitors. ERP systems replace complex and sometimes manual interfaces between different systems with standardized, cross-functional transaction automation. Order cycle

times (the time from when an order is placed until the product or service is delivered) can be reduced, resulting in improved throughput, customer response times, and delivery speeds (Cotteleer and Bendoly, 2006). According to Hunton et al. (2003), ERP system provides major changes in culture and behavior models which are the main sources of economic advantages. ERP systems success (synonymous with ERP success) refers to the use of such systems to enhance organizational effectiveness (Gable, Chan, 2003; Ifinedo, 2006a), which is different from the technical implementation success of such systems wherein measurement indicators such as cost overruns, project management metrics, and time estimates are the main concerns.

E-Supply Chain Management (E-SCM) uses the advances of technology made available through the advancement of the internet to further simplify SCM by utilizing it to simplify the flow of information to different members of the supply chain, thus, further making SCM more efficient and much easier. Through this, a supply chain can share crucial information in real-time. The use of the internet in information sharing will better reflect decisions from all spheres of the business in and out as it also facilitates information sharing and collaboration according to Gimenez and Lourenco (2004). Also from Gimenez and Lourenco (2004), it can be seen that the primary effect of E-SCM to organizations is that the internal value chain is improved as well because of information sharing and collaboration. Functional and business units are able to improve customer relationship management and customer service management as a result (Gimenez & Lourenco, 2004). Supply chain business process integration involves collaborative work between buyers and suppliers, joint product development, common systems and shared information. According to Lambert and Cooper (2000), operating an integrated supply

chain requires a continuous information flow. Lambert (2004) stated that SCM and E-SCM are crucial features for a successful ERP since the flow and information sharing is important for the business to function. SCM requires the management of materials and information flow in the whole chain, from suppliers through to customers.

A successful organization must be able to manage the integration of its business, technologies, processes, departments and people within the enterprise itself and across extended enterprises (Awad & Nassar, 2010). The integration inside any business organization includes not only integrating ERP systems with legacy systems to ensure an effective and efficient communications between these systems, but also include the integration of ERP systems with SCM systems and linking it with CRM systems to encourage the cooperation and collaboration across the entire value chain (Awad & Nassar, 2010).

Due to the rapid evolution in information and communication technologies (ICT), the traditional supply chain management processes have been enhanced to be integrated with different business processes for the purpose of increase the overall value of the chain, reduce cost, improve production process and compete with different business environments. As discussed in the earlier sections of this document, ERP effectively integrates all the information which is required for the business to operate including finance, accounting, production, human resources, quality management, sales and marketing. We can see that ERP is an integrated information system which integrates the internal working process of the organization, standardize the internal procedures for data processing and combines all the operations data which are generated by multiple

departments or functions (Adaileh & Abu-alganam, 2010) . On the other hand, Supply Chain Management (SCM) is the management of upstream and downstream to increase the value of the chain. It looks at the business as a chain of well integrated and connected entities which will add more value, reduce inventory, reduce lead time and reduce cost. The following table illustrates comparison between ERP and SCM which will help to understand how to build relationship and integrate these two systems(Tarn & Beaumont, 2002).

2.6 ERP in CRM and Organization Performance

CRM systems are the systems adopted to enable the maximizing of value of an organizations customer base (Kostojohn et al. 2011). By adopting technologies applied in CRM systems organizations streamline business processes and leverage every customer interaction. Streamlining business processes automates front-end routine tasks and standardizes best practices whereas leveraging customer information refers to tracking and saving data. By enabling both of these, correctly implemented and utilized CRM systems maximize revenue opportunities and customer loyalty as they enhance operations attached to the customer interface, which is crucial in the supply of today's markets. According to Kostojohn (2011) a strong CRM system is a system that improves operational efficiency – examining the customer perspective when making decisions, developing business processes and adjusting organizational structures. CRM systems exploit the customer facing functions of a business by centralizing customer information, automating marketing, providing business intelligence, tracking sales opportunities, analyzing data and enabling responsive customer service. A CRM system can be referred to as a platform where all the foresaid important information to develop, improve and

retain customer relations is stored (Microsoft, 2017). Why collecting, saving and sharing information of customers with the help of a CRM system has gained ground is not solely due to the supply of today's markets. Establishing new relationships in the business-to-business sector is costly and requires considerably more resources than developing current relationships. By increasing the value and satisfaction of existing customers, the existing customer base can help in establishing new relationships with positive word-of-mouth (Arantola 2003, 18). When implementing a CRM system customer relationship costs are minimized, and customer satisfaction and future potential are maximized. (Xu et al. 2002).

CRM and ERP systems are as stated separate stand-alone systems that aim to support different functions (Beal V. 2017). Depending on the strategy, a company can therefore select whether to increase its profitability by increasing sales or optimizing business processes. Additionally, to selecting either or, a company can implement both an ERP and a CRM system. The implementation of an ERP and a CRM system requires the systems to be compatible with each other or to be ran side-by-side. Having a compatible CRM and an ERP system enables a company to integrate the two systems together (Baran R. 2012). An integration allows information to be automatically transferred between the two systems.

Research states that CRM systems encompass the external part of the extended enterprise, and ERP encompasses the internal part (Gartner, 2013; Extraprise, 2008; Alshawi et al., 2011). That is, while CRM applications extract customer information from customer facing processes, ERP applications leverage the information to configure

product offerings, scheduling, and fulfilment processes (Hitt et al., 2002). As more firms realize that they need to know their customers very profoundly in order to compete or survive, integrating CRM with ERP becomes a critical topic (Payne and Frow, 2005; Ryals, 2005). Integrated CRM and ERP systems automatically communicate customer and process-related information to each other (Rai et al., 2006), increase interdepartmental connectedness, facilitate the dissemination of market intelligence amongst multiple departments and locations, and improve the entire organization's responsiveness to consumer demands (Liu et al., 2013). Moreover, some researchers suggest that IT value is better captured when taking into consideration moderator relationships on the link between IT resources and business value (Liu et al., 2013; Mishra and Agarwal, 2010).

Although few, some IS researchers have identified ERP and CRM integration as one of the most important fields for future IT value research (King and Burgess, 2008; Alshawi et al., 2011; Davenport, 1998; Kim et al., 2015; Willis and Willis-Brown, 2002; Liu et al., 2013; Melville et al., 2004) and claim that system integration is a key factor that shapes how IT is applied to digitize business processes and generate value. Some researchers point out that business process integration plays an important role for return on investment on improvements in both ERP (Roh and Hong, 2015; Narayanan et al., 2011; Samaranyake, 2009) and CRM (Osarenkhoe and Bennani, 2007; Light, 2003; Nguyen and Mutum, 2012; Liu et al., 2013).

2.7 ERP systems in HRM and organization performance

A business is concentrated by four productive resources namely its Land, Labour, Capital and Enterprise to produce or sell products and provide services. Simultaneously while achieving business tasks, concentration must be given to the people who carry out these functional jobs i.e., the organization's Human resource (HR). Human Resources are the company's people included in all hierarchy from employees to middle managers and non-managerial employees to the CEO and others (Jones, 2007). IT is the solution for all businesses, together with its employees and capital which is a potential functionality for a business strategy. Information technology plays a vital role in various process like improves the utilization of the company's assets, decreases inventory cost, reduces production time and reducing labour cost (Swanson and Beath, 1991). From many years, the technology has almost reached every phase of human resource management. Computer technologies and software are playing a vital role in HR operations from enrolment to recruiting and from training process to retirement management. The organization's requirements have grown so far that their HR systems are getting more complex and are integrating with other systems within the firm. Ian Turnbull, a system consultant says that, "Today's HRM must think about how its systems can interact with the entire enterprise" (Greengard, 2001) and ERP is the answer for it.

One of the motivating applications in ERP market is its Human Resource application (Vander,2000). Before companies were only adapting the first waves of ERP: manufacturing, financial and sales modules but now there is an excess usage of the second ERP wave, Human resource module which is getting very popular to gain competitiveness (Salvendy, 2001). According to the research carried out by Hunter

Group in 2008 illustrates the beginning of ERP's Human Resource module which shows that greater than 60% of all companies had not implemented HR applications before the year 2000. Slowly, the implementation of HR module became logistically essential because of Y2K issues and also to focus on the business operations which took concern over HR needs.

The management which involves the activities framed to recruit best candidates suitable for the respective nature of the job and improve their skills and abilities by providing them good and proper support is called Human Resource Management (HRM). The five gears of HRM system are: recruitment and selection, training and development, performance feedback, payments and benefits, and labour relations (Jones, 2007)

Some scholars have already studied the relationship or connection of ERP implementation with HRM. For instance, Ashbaugh and Rowan (2002) argued that the major difference between ERP and its predecessors (e.g.,MRP II) is the linkage of financial and HRM applications through a single database in a software application that is both rigid and flexible. Wright and Wright (2002) listed two of the most-cited HRM risks in an ERP system: lack of user involvement and inadequate training. Hsu, Sylvestre, and Sayed (2006) supplied another often-overlooked HRM factor when implementing an ERP system-that is, the result of high stress levels on the staff, particularly in the finance or accounting departments, which are already under stress from the heavy workload in a legacy system. Li (2001) studied the HRM function module in an ERP system. He insisted that the practical HRM system should be built up to improve incentive mechanism and to strengthen the training of employees while applying ERP.

2.8 ERP Systems in Financial Management and Organization Performance

The accounting module is the heart of an ERP system, typically incorporating applications such as general ledger, accounts receivable and payable, fixed assets, cash management, cost control and budgeting. However, ERP systems offer companies the ability to improve business processes by integrating all the functional areas within an organization. Both financial and non-financial data can be integrated. To the best of the authors' knowledge, one study has been conducted so far addressing this issue in Australia (Booth et al., 2000). Their evidence suggests that ERP systems have proved to be effective in transaction processing and less effective in reporting and decision support. Further, they suggest that ERP systems provide both the incentives and means for adopting newer accounting practices such as activity-based budgeting (ABB), product lifecycle costing (PLC), and balanced scorecards.

In order to understand the adoption of ERP systems, the history should be reviewed ERP solutions date back to the 1960s when the early accounting and inventory systems were introduced (Elragal & Haddara, 2012). Monitoring operational expenses was the main competitive thrust in the 1960s (Jacobs & Weston, 2007). Consequently, manufacturing plans became more product-centered based on high-level volume production, the minimization of costs, and presuming solid financial requisites (Jacobs & Weston, 2007). According to Motiwalla & Thompson (2008), enterprise resource planning systems are early generation enterprise systems that target the integration of data and to provide support to the organizations main functions. The development of ERP software from

1960's to today has been affected by other major IT inventions (Plex, 2015). The development seen from minicomputers to the cloud is helping the organisations to assemble their businesses.

Most small- and medium-sized enterprises use basic business software to manage their daily operations (Almajali, Masa'deh, & Tarhini, 2016). Eventually, they consider changing to an ERP system. However, implementing ERP system successfully is costly and complex, and frequently shows high disappointment rates if the ERP system does not readily align with the company's business requirements or their social environment (Almajali, Masa'deh, & Tarhini, 2016). ERP products are designed to help organizations work more efficiently (Plex, 2015). The first ERP systems were similar to Manufacturing Resource Planning (MRP) systems and were used by other types of organizations. MRP (material requirements planning) and ERP (enterprise resource planning) were implemented to manage the operations of these organizations. The two main concerns in past years were business procedures and accounting. ERP solution offers some products like Oracle, JD Edwards, SAP and more. As the organizations grow, finance teams must give guidance to the business and be able to analyses data, rather than storing data and assembling it. Microsoft Dynamics Great Plains, helps organizations to maintain and perform different functions (Awsai, 2013). Human resource management, financial management, operational management and assembling are the elements of an ERP system (Awsai, 2013).

Scapens and Jazayeri (2003) reviewed the literature to find that 'ERP systems arehaving relatively limited impacts on management accounting and management accountants.

According to the literature, the purpose of Scapens and Jazayeri (2003) was ‘to explore the processes of change and to examine in more depth the nature of the changes in management accounting which have accompanied the implementation of an ERP system ... within a specific organization.’ The latter lead to more information sharing and teamwork on one hand and greater centralization of information processing activities (pp. 216- 218) on the other. Although the authors considered three years to be long enough to study the change process, this would not appear long enough given the existence of institutional forces (Burns and Scapens, 2000). Booth et al. (2000) analyzed the extent to which the application, by an enterprise, of an ERP system can result in the adoption of new accounting practices. It was concluded that ERP systems represent data sources for new accounting practices, being designed to support that practices. More exactly, Rom and Rohde (2006) found that ERP proved to be very useful in terms of data collection, as well as management accounting.

This was further confirmed by Javernpaa (2007), who noted that such systems lead to more efficient development of the routine activities, adoption of new management accounting practices, use large databases more quickly and reporting in a more flexible and faster way. According to Colmenares (2009), the implementation of the ERP systems generated benefits for the enterprise, consisting of the improvement of the decision-making processes, as well as enterprise integration. On contrary, Kelton et al. (2010) noted that the effects of the information presentation, through ERP implementation are pervasive and affect the decision-making processes in various contexts

The influence of ERP systems on management accounting was studied by Booth et al. (2000). Later cited by Granlund and Malmi (2002), Scapens and Jazayeri (2003), Spathis and Constantinides (2003) and Spathis and Ananiadis (2005), the study of Booth et al. (2000) is one of the first papers analyzing the relationship between ERP and management accounting. The survey found that ERP systems are best at transaction processing, whereas they have only limited effects in reporting and decision support. In addition, Booth et al. (2002, like Granlund and Malmi, 2002; and Hyvönen, 2003) did not find evidence that implementing an ERP system would lead to adoption of advanced accounting practices.

The study of Maccarrone (2000) investigated the benefits of ERP implementation towards accounting information and management processes. The researcher identified two categories of benefits related to ERP systems: time related benefits, like reduced need of time to perform some activities, which lead to other benefits and quality-related benefits. Further, Granlund and Malmi (2002) investigated the effects of ERP systems on adoption of modern management accounting principles in ten companies. The results indicated that half of the companies have integrated their cost accounting practices into ERP environment while the other half exploited stand-alone software (e.g., spreadsheets).

Although the respondents did not consider that the ERP implementation has changed the logic of management accounting, ERP was considered to have improved management accounting process through better access to data. Scapens and Jazayeri (2003) wanted to investigate in more detail the changes in management accounting by studying an SAP implementation in a European company. SAP was seen to have facilitated the work of

middle-level and lower-level managers by providing them real-time information. On the other hand, senior managers still need to devote significant time to prepare complex reports. The implementation of SAP program did change some of the management accounting principles in the analyzed company. However, one cannot be sure whether these changes have emerged as a result from the implementation. The benefits of ERP systems on accounting information and management process have also been researched by Spathis and Constantinides (2003), who identified increased flexibility in information generation, improved quality of reports and financial statements and increased integration of applications as the highest perceived benefits. Another study by Spathis and Ananiadis (2005) recognized three dimensions of benefits: managerial, operational and IT infrastructure.

2.9 Conceptual Framework

This study is based on the concept that performance of County Governments would be improved with the implementation of Enterprise resource planning. The integration of the business processes will enhance the transaction processes efficiency in the organization as all the functions in departments of the organization will be linked. The study anticipates that the automation of the processes in the organization will enhance the effectiveness in service delivery to the members of the publics and other customers and minimize the corruption levels in the organization. The adoption of ERP will enhance generation and access of real time information hence enhancing decision making process in the organization hence improved the performance of the organization. The adoption of

ERP by the organization will enhance innovation of business processes in the organization hence leading to improved performance.

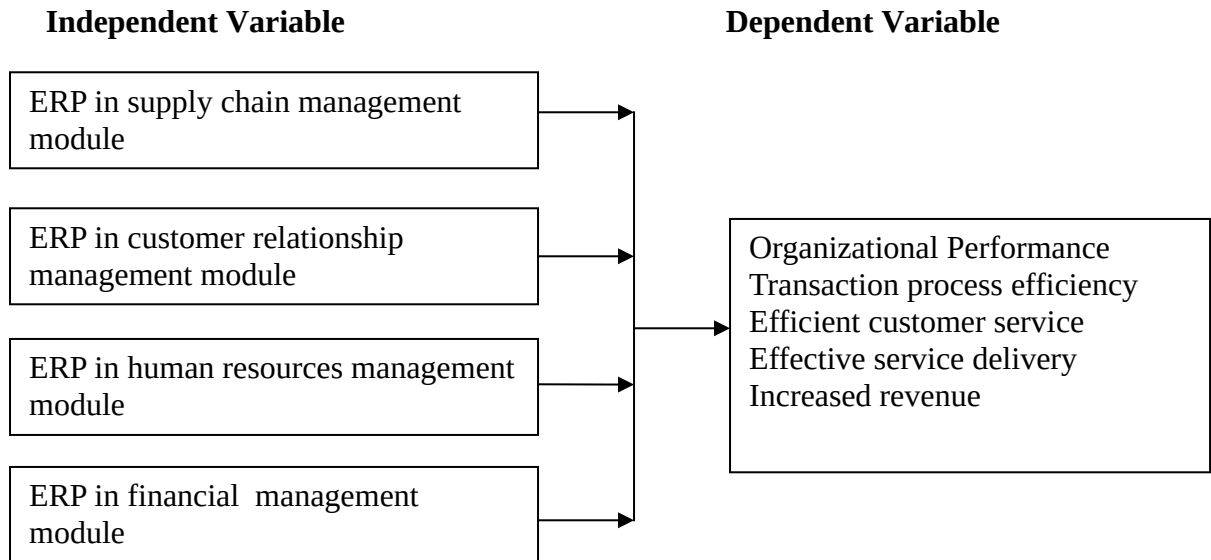


Figure 2.1 Conceptual Framework

Source; (Author, 2017)

2.10 Summary of Literature and Gaps

Enterprise resource planning have been found to impact positively of the performance of organizations through the integration of various departmental information. ERP has been found to result into tangible and non-tangible benefits which help sustain operational efficiencies in the long run. However, studies have also demonstrated that not all ERP adoptions will lead to improved performance of the organization. ERP systems have been found to perform better in transaction processing and enhancement of decision-making process as the departments are able to share the common data and practices across the

enterprise. While these studies highlight the important of ERP in organizational performance, these studies were mainly done in the private sector whose goals are profit making. There is however no study done on the effect of ERP adoption on the performance of public organizations hence a knowledge gap. This study seeks to determine the effect of ERP system of the performance of County Governments.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research design, the study population, sample and sampling techniques, research instruments, data collection procedures and methods of data analysis.

3.2 Research Design

The study was explanatory in nature and sought to establish the perception of managerial and non-managerial users of ERP system on performance of county government. The use of a survey design was appropriate in instances where there was need to determine the effect of ERP of organizational performance. It provides a method for collecting descriptive data that forms a basis of making generalizations about the phenomenon of interest (Kothari, 1990; Mugenda, 2008)

3.3 Target Population

According to Ngechu (2004), a population is a well-defined set of people, services, elements and events, group of things or households that are under investigation. The study targeted 1,640 permanent employees from ICT and finance ministries from six counties in the North Rift region in Kenya. These included: Nandi, Uasin Gishu, Elgeyo Marakwet, Trans Nzoia, Baringo and West Pokot Counties. The study further targeted 6

county governors, 6 county secretaries and 18 county executive officers, (finance, natural revenues and planning).

Table 3.1 Target Population

County	Department	Number of Employees
Elgeiyo Marakwet	Finance	221
	ICT	60
Uasin Gishu	Finance	220
	ICT	41
Nandi,	Finance	210
	ICT	34
Trans Nzoia	Finance	196
	ICT	68
Baringo	Finance	211
	ICT	75
West Pokot	Finance	233
	ICT	71
	Total	1640

Source; (HR Databases of Counties, 2016)

3.4 Sample Size and Sampling Techniques

According to Ogula (2008), a sample is the number of individuals or things selected from a population. Cohen *et al.*, (2011) have stated that the correct sample size depends on the purpose of the study, the nature of the population under study, level of accuracy required, and the anticipated response rate, number of variables included and whether the research is quantitative or qualitative.

Taro Yamane (1973) sample size formula and modified by Kent, (2008) was used to select a sample size of 321 employees in the ICT and revenue departments in each of the six Counties as shown below;

$$n = \frac{N}{1 + N_e^2}$$

Where:

n = Sample size
 N = Population size
 e = the Sampling error

This study allowed a sampling error of 0.05. Thus, sample size was as follows:

$$321 = \frac{1640}{1 + 1640(0.05)^2}$$

Using this formula, a sample of 321 employees in planning and revenue departments was selected. Thereafter, the Neyman's allocation formula was used to proportionately allocate employees into the 6 county governments.

The purpose of the method was to maximize survey precision, given a fixed sample size.

With Neyman allocation, the best sample size for stratum h would be

$$n_h = \left(\frac{N_h}{N} \right) n$$

Where,

n_h was the sample size for stratum h,

n was total sample size,

N_h was the population size for stratum h,

N was the total population.

Table 3.2 Sample Size

	Dept	Number Of Employees	Sample Size
Elgeyo Marakwet	Finance	221	43
	ICT	60	12
Uasin Gishu	Finance	220	43
	ICT	41	8
Nandi,	Finance	210	41
	ICT	34	7
Trans Nzoia	Finance	196	38
	ICT	68	13
Baringo	Finance	211	41
	ICT	75	15
West Pokot	Finance	233	46
	ICT	71	14
	Total	1640	321

Source: (Researcher, 2017)

In this study, simple random sampling techniques were used to select a representative sample from the six County governments. Simple random sampling technique was used to select 321 sampled employees.

3.5 Data Collection Instrument

The study collected primary data using a structured questionnaire. According to Borg and Gall (1997), a structured questionnaire refers to questions which are accompanied by a list of possible alternatives from which respondents select the answer that best describes their situation. This tool was appropriate to the study because of the nature of information that is sourced from the target respondents. Questions were therefore be standardized to ensure all respondents reply to the same questions and the response to each question was by ticking or writing a brief statement on the questionnaire. This enhanced control towards getting specific responses relevant to the study. The questionnaires consisted of five sections having closed and open ended questions. Section one captured demographic data about respondents' job title, age, gender, education and years of service at the firm. Section two sought information on the frequency of modules used by respondents. The rest of the questionnaire included questions on a five-point Likert-type eliciting respondents' perception on the extent of the effect of ERP systems on business processes. In particular they seek to find out the effect of the ERP on the efficiency of transaction processing, efficiency on customer service and effectiveness on service delivery.

3.6 Validity and Reliability of Research Instruments

3.6.1 Validity of Research Instruments

A research instrument is said to be valid if it measures what it is supposed to measure. The draft questionnaires were given to two selected persons knowledgeable in research to ascertain the items suitability in obtaining information according to research objectives of the study. The university supervisors were the selected experts for purposes of validation. This process assisted in illuminating any potential problems of the research instrument and provided a basis for design or structural changes. This was done to test the validity and workability of the instrument.

3.6.2 Reliability of Research Instruments

Reliability of measurements concerns the degree to which a particular measuring procedure gives similar results over a number of repeated trials. The researcher pre-tested each of the questionnaires to the pilot sample. These respondents were not used in the main study. Pre-testing was conducted to check the questionnaires structure and the sequence, meaning and ambiguity of questions. After the pre-testing exercise, the piloted questionnaires were scored manually. Thereafter, reliability scores were computed using Statistical Package for Social Sciences (SPSS).

To measure the reliability, the Cronbach Alpha technique was employed. The questionnaire were divided into two parts using the even and odd numbers. Cronbach Alpha is a model of internal consistency, based on the average inter-item correlation. A large value of alpha (preferably greater than 0.5) indicates high level of consistence of the

instruments in measuring the variables. A Cronbach's Coefficient alpha of 0.743 was computed for the four independent variables based on data collected to test the reliability as shown below. When high coefficient is seen, it implies that the factors tested are valid and consistent in measuring the concept, (Dawson, 2002).

3.7 Data Collection Procedure

The questionnaires were self-administered by the researcher to key informants involved in either passing of accounting data or in the use of information generated by the accounting information system. The drop and pick method were used to administer the questionnaires where it is not possible to secure immediate completion. For the instruments left behind, the researcher gave the respondents two days within which the completed questionnaires were collect.

3.8 Data Analysis Techniques

The data collected using the questionnaires were cleaned prior to analysis. This involved editing of the primary data to identify and eliminate errors made by respondents. The data was analyzed and presented using descriptive statistics such as mean scores and standard deviation to determine the distributions of the variables. The results of analysis were presented in pie charts, tables and graphs. In addition, to further determine the power of the study model, the study regressed the variables using Ordinary Least Square (OLS). The study also used Pearson's Moment Correlation to test the association between variables.

OLS regression model

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \varepsilon$$

Where:

$Y_{(i,t)}$ - Is the performance of the County Governments.

β_0 - Is the constant

X_1 - ERP in SCM

X_2 - ERP in CRM

X_3 - ERP in HRM

X_4 - ERP in SCM financial management

$\beta_1, \beta_2, \beta_3, \& \beta_4$ - Coefficients

e_i - Is the residual error.

All the above statistical tests were used with the aid of the Statistical Product for Service Solution (SPSS), version 20. All tests were two-tailed. Significant levels were measured at 95% confidence level with significant differences recorded at $p < 0.05$

3.8.1 Underlying Assumptions of Multiple Regression Model

A regression model is a mathematical representation of what and how independent variables are related to the dependent variables. All regression models have assumptions, and violation of these assumptions can lead to unreliable results. The following assumptions that underline multiple regression model of analysis were assessed:

- i. Normality is the assumption that the scores on a continuous variable are normally distributed about the mean, (Tharenon *et al.*, 2007). Normality of independent variables was tested using mathematical methods. The normality of distribution was inspected using the degree of Skewness and kurtosis of variables. Similarly,

the normality of distribution was also checked by use of Kolmogorov-Smirnov test.

- ii. Linearity refers to the degree to which the change in the dependent variable is related to change in the independent variables (Hair *et al.*, 2010). Linearity between the dependent variable and each independent variable was tested using the Pearson's Product Moment Correlation Coefficient (PPMC). The goal was to assess the strength of linear relationships among variables.
- iii. Homoscedasticity refers to the assumption that the dependent variable exhibits similar amounts of variance across the range of values for independent variables around the regression line, meaning they have equal spread.
- iv. Multi-collinearity refers to the presence of high correlations between independent variables (Williams *et al.*, 2013). In this study, multi-collinearity was assessed by means of tolerance and Variance Inflation Factor (VIF) values. Normally, a tolerance value of below 0.01 or a VIF value greater than 10 reveals a serious multi-Collinearity problem (Hair *et al.*, 2006; Leech *et al.*, 2011). Tolerance indicates the amount of variability of the particular independent variable not explained by other independent variables, whereas VIF is the inverse of the tolerance statistic.

3.9 Ethical Considerations

The researcher sought approval from Moi University and to carry out the study. Thereafter, the researcher sought for permission and authorization from the county commissioners of the selected counties before conducting the study. After being granted

the permission, the researcher visited the respective respondents to inform them about the researcher's intentions, present a research permit and the authorization letter. The researcher sought for their consent and assured them on confidentiality before conducting the study. After all this was done, the researcher worked closely with respective respondents to collect the required data for the study.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents the data analysis, presentation and interpretation of the findings. Analysis of the data was undertaken with the aid of the Statistical Package for the Social Science (SPSS) version 20. Statistical analysis tests that comprised both descriptive and inferential statistics were used.

4.2 Response Rate

The study distributed 321 questionnaires to the respondents and 249 questionnaires were returned giving a response rate of 78% and ascertained to be complete. This response rate was acceptable since according to Fowler (2002), the whole point of conducting a survey is to obtain useful, reliable, and valid data in a format that makes it possible to analyze and draw conclusions about the total target population. Although there is no agreed-upon minimum response rate, the more responses received, the more likely to draw statistically significant conclusions about the target population. Babbie, (2007) asserts that a response rate of 60% is good and 70% is very good.

4.3 Demographic data

Demographic data that is used in assessing demographic characteristics of respondents are important in highlighting disaggregation of the variables under investigation. This

enables the understanding of how these demographic characteristics influence the relationship between the main factors under investigation. Thus, this study assessed gender, age, academic qualification and job tenure as demographic characteristics and the findings were presented in Table 4.1.

Table 4.1: Demographic characteristics

		Frequency	Percent
Gender	Male	122	49
	Female	127	51
	Total	249	100
Age	20-29 yrs	66	26.5
	30-40 yrs	110	44.2
	40-50yrs	40	16.1
	Above 50 yrs	33	13.3
	Total	249	100
Academic qualification	Certificate	14	5.6
	Diploma	95	38.2
	Degree	133	53.4
	Masters	7	2.8
	Total	249	100
Job tenure	1-3 years	3	1.2
	3-6 years	235	94.4
	Above 6 years	11	4.4
	Total	249	100

Source; (Survey Data, 2017)

The findings in Table 4.1 shows that the number of male and female employees who use the ERP system from various departments at the County government was almost equal with 49% of the employees being male and 51% female. Gender equality in terms of access to employment opportunities has been emphasized in many quarters and is an important component of the constitution that emphasizes the 2/3 gender rule. The findings also show that 44.2% (110) of the employees are aged between 30 to 40 years, 26.5% (66) are aged between 20 and 29 years, 16.1% (40) are aged between 40 and 50 years while 13.3% (33) are aged above 50 years.

The workforce is mainly made up of youthful employees with over 70% of them aged between 20 and 40 years. The findings also show that 53.4% (133) of the employees have reached degree level of education, 38.2% (95) are diploma holders, 5.6% (14) are certificate holders while 2.8% (7) are holders of master's degrees. The use of the ERP systems requires the ability to be conversant with the various components of the system in ensuring that the system performs what is supposed to and thus, education or literacy is important.

Finally, the findings show that 94.4% (235) of the employees have worked in the County government for 3 to 6 years, 4.4% (11) have worked for over 6 years while 1.2% (3) have worked for 1 to 3 years. These findings on job tenure are in line with the age of the employees that shows that majority of the young employees have been employed in the County government in the past 3 to 6 years and also in line with the promulgation of the new constitution that ushered in the County governments.

4.3 Supply Chain Management Module

Integration of ERP into the supply chain management process is a critical component in ensuring error reduction and involves various components such as information technology that brings in the aspect of innovation for efficiency. The study thus sought to assess the level of integration of ERP into the supply chain management module of the various departments in the County government basing on the perspective of the employees who are the users of the ERP system and the findings were presented in Table 4.2.

Table 4.2: Supply Chain Management Module

N=249	Mean	Std. Deviation	Skewness	Kurtosis
ERP make it easier to establish and alter the parameters within which a supply chain is required to operate.	2.97	1.079	-0.235	-0.760
The country use ERP to handle procurement and supply of the goods, services and other resources that are needed across the supply chain	2.96	1.308	-0.212	-1.205
The county uses ERP to ability to monitor, review and alter supply chain efforts and activities in real-time to ensure cost-effective operations	2.99	1.132	-0.455	-1.045
The county uses ERP to track orders and fulfill them when necessary	2.88	1.45	-0.139	-1.343
ERP provides complete visibility across the supply chain network which is highly impossible in the manual process	3.10	1.384	-0.281	-1.179
ERP helps organization to have a control over all the suppliers and distributors	2.92	1.253	-0.038	-0.97
ERP connect all the members across the network can share vital information like demand, forecasting reports, inventory levels, status of production, transportation plans and many more in real time	3.37	1.415	-0.554	-1.077
SC module	3.482	0.763	-0.603	0.061

Source; (Survey Data, 2017)

From the findings in Table 4.2 a mean of less than 1.5 means strong disagreement with the statement, greater than 1.5 but less than 2.5 means disagreement, greater than 2.5 but less than 3.5 means neutral, greater than 3.5 to 4.5 means agreement while more than 4.5 to 5.0 means strong agreement. The findings show that majority of the employees expressed a neutral perspective regarding the ERP making it easier to establish and alter the parameters within which a supply chain is required to operate, mean = 2.97 (SD =

1.079). This means that the employees were not well versed with how the ERP can be used in making it easier and alter some constraints of supply chain management showing less capacity. Furthermore, majority of the employees were neutral with the statement that the County uses ERP to handle procurement and supply of the goods, services and other resources that are needed across the supply chain, mean = 2.96 (SD = 1.308). These findings show that although the ERP exist at the county departments, it is not integrated in departments such as procurement and supply of goods thereby showing that there are existing inefficiencies within the current procurement and supply of goods processes that would otherwise be improved by the integration of the ERP system.

The findings also show that majority of the employees were neutral about the statement that the county uses ERP ability to monitor, review and alter supply chain efforts and activities in real-time to ensure cost-effective operations, mean = 2.99 (SD = 1.132). This shows that the county to a significant extent is denied the benefit of having cost-effective operations because of the lack of integration of the ERP system. Majority of the employees were also neutral with the statement that the county uses ERP to track orders and fulfill them when necessary, mean = 2.88 (SD = 1.450) showing that the county also faces challenges in integration of ERP in tracking of orders and fulfilling such orders.

Furthermore, the findings also showed that majority of the employees were neutral with the statement that ERP provides complete visibility across the supply chain network, which is highly impossible in the manual process, mean = 3.10 (SD = 1.384) and indicates that since there is incomplete integration, the manual process is still used to a certain extent. The findings also show that majority of the employees were neutral with the statement that ERP helps organization to have a control over all the suppliers and

distributors, mean = 2.92 (SD = 1.253) while majority also were neutral with the statement that ERP connect all the members across the network can share vital information like demand, forecasting reports, inventory levels, status of production, transportation plans and many more in real time, mean = 3.37 (SD = 1.415) that shows challenges in terms of reporting, analysis of reports as well as other critical processes. The mean response was 3.482 (SD = 0.763) showing that majority of the employees were not sure of the level of integration of the ERP system within the supply chain management processes of majority of the departments at the County.

4.3 Customer Relationship Management Module

The relationship between the various departments and their clients is critical to their success and sustainability especially in public institutions. On the other hand, the relationships can further be enhanced by embracing innovations such as ERP that when they are integrated into the system would greatly enhance the customer relationship management module. Thus, the study sought to establish the perspective of the employees about the level of integration of ERP into the customer relationship management module and the findings were presented in Table 4.3.

The findings in Table 4.3 show that majority of the employees agree that the county has installed ERP to integrate its citizen data with a centralized data warehouse, mean = 3.95 (SD = 1.019) which reveals that the county has installed the ERP.

Table 4.3: Customer Relationship Management Module

N=249	Mean	Std. Deviation	Skewness	Kurtosis
The county has installed ERP to integrate it citizen data with a centralized data warehouse	3.95	1.019	-0.825	-0.103
Compares the characteristics of one citizen with another, for determining each citizen segment	3.78	1.072	-0.322	-0.949
ERP manages county citizen integration using coordinated mix of interaction channels (multi-channel management)	3.67	0.593	-1.487	3.752
ERP systems link citizens records with stakeholders, employees, suppliers and customers into the same database	3.59	0.955	-0.263	-0.499
ERP systems record information for all business licensed in the county and every department is linked to that information	3.30	0.819	-0.031	0.206
ERP enable response through convenient channels such as e-mail or, for mobile-phone users, Short Message Service (SMS)	3.63	0.894	-0.079	-0.287
CRM module	3.556	0.937	-1.142	0.881

Source: (Survey Data, 2017)

Furthermore, the findings show that the ERP compares the characteristics of one citizen with another, for determining each citizen segment, mean = 3.78 (SD = 1.072) and also agreed that ERP manages county citizen integration using coordinated mix of interaction channels (multi-channel management), mean = 3.67 (SD = 0.593), ERP systems link citizens records with stakeholders, employees, suppliers and customers into the same database, mean = 3.59 (SD = 0.955) and that ERP enable response through convenient channels such as e-mail or, for mobile-phone users, Short Message Service (SMS), mean = 3.63 (SD = 0.894). However, majority of the employees were neutral with the statement that ERP systems record information for all business licensed in the county and

every department is linked to that information, mean = 3.30 (SD = 0.819). The findings show that there is integration of the ERP into various segments that are concerned with customer relationship management but has a challenge in terms of recording information for all business licensed in the county and every department is linked to that information which shows that there is inefficient sharing of information within and between the departments and with their customers who are the citizens of the county.

4.4 Human Resources Management Module

The human resource management module is one of the crucial departments within any organization or institution and the proper functioning of this department can be enhanced by ensuring that the processes carried out are efficient and effective and of high quality in line with standards. The integration of ERP is one of the means through which the human resource department can enhance their processes through innovation. The study thus sought to establish the level of integration of the ERP into the human resource management module by assessing the perspective of the employees. The findings were presented in Table 4.4.

Table 4.4: Human Resources Management Module

N=249	Mean	Std. Deviation	Skewness	Kurtosis
The county uses ERP to accurately maintain employee information	3.40	0.707	0.561	1.262
The county uses ERP to track job applicant information such as Resumes, Personnel records	3.69	0.771	-0.404	1.041
The county uses ERP for Payroll Paychecks, tax reports, accounting data	3.41	0.793	-0.273	0.413
ERP is employed in the county for Travel reimbursement and Training classes	3.69	0.676	-0.404	1.165
In the county ERP is means to arrange the timetable for the enterprises and staff flexibly according to the local calendar	3.92	0.580	-1.492	6.142
ERP system is also used to analyze or forecast the human resource planning costs by integrating relevant information	3.47	0.690	0.466	0.298
ERP system assists the county governments in decision making of managers by simulating the performance of human resource planning and comparing the data	3.97	0.491	-1.314	7.692
ERP offers scientific management to recruitment costs	3.68	0.667	-0.595	1.918
ERP system can record the attendance rate and other relevant information by using a Telematics Control Unit (TCU)	4.02	0.69	-0.541	1.140
The ERP system will record data in a central database and keep relevant data timely for each evaluation index.	4.17	0.846	-1.223	1.725
Integrating the compensation management system with other systems) so that it can update relevant data in a timely fashion so as to establish a dynamic compensation calculation system.	3.43	0.738	0.275	0.478
HRM module	3.473	0.745	-0.809	1.672

Source; (Survey Data, 2017)

The findings in Table 4.4 revealed that majority of the employees agreed that the county uses ERP to track job applicant information such as Resumes, Personnel records, mean =

3.69 (SD = 0.771), ERP is employed in the county for Travel reimbursement and Training classes, mean = 3.69 (SD = 0.676), in the county ERP is means to arrange the time table for the enterprises and staff flexibly according to the local calendar, mean = 3.92 (SD = 0.580), ERP system assists the county governments in decision making of managers by simulating the performance of human resource planning and comparing the data, mean = 3.97 (SD = 0.491), ERP offers scientific management to recruitment, mean = 3.68 (SD = 0.667), ERP system can record the attendance rate and other relevant information by using a Telematics Control Unit (TCU), mean = 4.02 (SD = 0.690) and the ERP system will record data in a central database and keep relevant data timely for each evaluation index, mean = 4.17 (SD = 0.846). However, despite this, there are challenges identified with the integration of the ERP in the human resources management module. Majority of the employees were not sure whether: the county uses ERP to accurately maintain employee information, mean = 3.40 (SD = 0.707), the county uses ERP for Payroll Paychecks, tax reports, accounting data, mean = 3.41 (SD = 0.793), ERP system is also used to analyze or forecast the human resource planning costs by integrating relevant information, mean = 3.47 (SD = 0.690) and that Integrating the compensation management system with other systems) so that it can update relevant data in a timely fashion so as to establish a dynamic compensation calculation system, mean = 3.43 (SD = 0.738). These findings show that although there are various functions that are played by the ERP in human resource management, there are challenges that need to be addressed in order to enhance the functions of the resource management module through the ERP system. This means that the overall mean response of 3.473 (SD = 0.745)

indicated neutrality with the level of integration of ERP into the human resource management module.

4.5 Financial Management Module

The financial management module within any institution or organization is the most sensitive because of the sensitive nature of what is dealt with and processed. Getting it right in the financial management module means that issues to do with financial compliance are well addressed hence vices such as corruption are removed within the system thus increasing efficiency, fairness, accountability and performance of the department. The study thus sought to assess the integration of ERP in the financial management module in the various departments at the county governments by examining the perspectives of the employees and the findings were presented in Table 4.5.

Table 4.5: Financial Management Module

N=249	Std.			
	Mean	Deviation	Skewness	Kurtosis
The county uses ERP to monitor and operate financial transaction	3.63	0.740	-0.863	2.286
ERP is used to control and track non-depreciating or depreciating financial company assets	3.93	0.762	-0.658	1.107
The county employs ERP effective payment acceptance and get secure and full financial processing	3.64	0.958	-0.331	-0.101
ERP controls workflow management, multi-dimensional information collection, dynamic assumptions and formulas and full financial planning statements	3.60	0.837	-0.432	1.034
The county uses ERP in budgeting and planning	3.41	0.804	-0.326	0.321
ERP automate all the financial procedures,	3.63	0.757	-0.394	0.805
ERP exclude the risk of errors in	3.48	0.713	0.347	0.188

county financial management ERP provide the clients with the bills as soon as possible and speed up payment processes	3.98	0.487	-0.262	2.109
The county uses ERP in Production of transactions Paychecks, invoices, checks, purchase order FM module	3.69	0.716	-0.527	1.374
	3.38	0.841	-0.900	0.326

Source; (Survey Data, 2017)

The findings in Table 4.5 show that majority of the employees agree that the county uses ERP to monitor and operate financial transactions, mean = 3.63 (SD = 0.740). Furthermore, majority of the employees agreed that: ERP is used to control and track non-depreciating or depreciating financial company assets, mean = 3.93 (SD = 0.762), the county employs ERP effective payment acceptance and get secure and full financial processing, mean = 3.64 (SD = 0.958), ERP controls workflow management, multi-dimensional information collection, dynamic assumptions and formulas and full financial planning statements, mean = 3.60 (SD = 0.837), ERP automates all the financial procedures, mean = 3.63 (SD = 0.757), ERP provides the clients with the bills as soon as possible and speeds up payment processes, mean = 3.98 (0.487) and the county uses ERP in production of transactions paychecks, invoices, cheques, purchase order, mean = 3.69 (SD = 0.716). On the other hand, majority of the employees were not sure whether the county uses ERP in budgeting and planning, mean = 3.41 (SD = 0.804) and whether ERP excludes the risk of errors in county financial management, mean = 3.48 (SD = 0.713). The mean response was 3.367 (SD = 0.841) that shows overall neutrality about the integration of ERP in financial management module in various departments at the county governments. These findings show that although there is integration of ERP in financial management in the financial management module at county government, there are

challenges in terms of use of the system and complete implementation of the system thus the full benefits are not obviously evident.

4.6 County Performance

The pinnacle of the implementation of any system within an organization can only be visualized in the performance of the organization in various areas. Given that county governments are public entities; the core stakeholder is the citizen of the county. It is thus the responsibility of the various departments at the county governments to ensure that they are able to meet the expectations of the public in various areas. Performance in this case was measured based on the capacity of the departments under the county government to deliver projects and their returns, timeliness, quality of service, budget lines, efficiency and effectiveness, reduction of corruption and the address of social, economic and technical performance goals. Thus, the study sought to establish the perspectives of the employees regarding county performance in the various areas given the level of integration and integration of the ERP system in the various management modules and the findings were presented in Table 4.6.

Table 4.6: County Performance

N=249	Std.			
	Mean	Deviation	Skewness	Kurtosis
The county has successfully implemented Projects within set out budget limits.	3.32	0.984	-0.467	-0.105
The county projects meet their technical or social performance goals.	3.44	1.034	-0.582	-0.351
Projects implemented meet their schedule objectives.	3.43	0.873	-0.820	0.251
Counties' project portfolio has an excellent balance of projects.	3.36	1.204	-0.586	-0.367

Most of the projects implemented provide good returns	3.47	1.024	-0.349	-0.167
The customers are served fast	3.82	1.053	-0.908	0.126
The level of corruption in the ministry has been minimized	3.82	1.053	-0.908	0.126
The payment of the suppliers are processed on time	3.84	1.072	-0.892	0.18
The quality of services to the county citizen has improved	3.57	0.710	-1.289	2.651
There is no more time wasting in locating files	3.55	0.975	-0.328	-0.268
Revenue has gone up	3.33	0.869	-0.183	0.311
Cost of operations have gone down	3.50	0.853	-0.683	0.136
County performance	3.70	0.562	-2.122	5.375

Source; (Survey Data, 2017)

The findings in Table 4.6 show that majority of the employees in various departments in the county governments agree that the customers are served fast and the level of corruption in the ministry has been minimized, mean = 3.82 (SD = 1.053) respectively. In addition, majority of the employees agree that: the payment of the suppliers is processed on time, mean = 3.84 (SD = 1.072), the quality of services to the county citizens has improved, mean = 3.57 (SD = 0.710), there is no more time wasting in locating files, mean = 3.55 (SD = 0.975) and cost of operations have gone down, mean = 3.50 (SD = 0.853). These findings show that because of the integration of the ERP, there has been improvements in the level and quality of customer service, reduction in corruption and wastage. However, there were challenges noted in terms of performance of the county in certain areas since majority of the employees were not sure whether: the county has successfully implemented projects within set out budget limits, mean = 3.32 (SD = 0.984), the county projects meet their technical or social performance goals, mean = 3.44 (SD = 1.034), projects implemented meet their schedule objectives, mean = 3.43 (SD = 0.873), county's project portfolio has an excellent balance of projects, mean = 3.36 (SD =

1.204), most of the projects implemented provide good returns, mean = 3.47 (SD = 1.024) and whether revenue has gone up, mean = 3.33 (SD = 0.869). This essentially shows that there are challenges in the integration and implementation of the ERP system despite the system having increased performance in certain areas in the county departments. Overall, the mean response was 3.70 (SD = 0.562) that shows that majority of the employees had the view that county performance has increased given the integration of the ERP system in the functions of various departments in the county government.

4.7 Factor Analysis

Factor analysis is a [statistical](#) method used to describe [variability](#) among observed, correlated [variables](#) in terms of a potentially lower number of unobserved variables called factors. Factor analysis searches for joint variations in response to unobserved [latent variables](#). The observed variables are modelled as [linear combinations](#) of the potential factors, plus "[error](#)" terms. Factor analysis aims to find independent latent variables. The theory behind factor analytic methods is that the information gained about the interdependencies between observed variables can be used later to reduce the set of variables in a dataset. Given the factors being examined in this study and their items, factor analysis was carried out with the aim of reducing the items used to describe a given factor. The varimax criterion was applied where maximum common variance from all variables was extracted and put into a common score Kaiser Normalization. The findings are presented in Table 4.7 and Table 4.8.

Table 4.7: KMO, Bartlett's Test and Variance Explained

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.774	
Bartlett's Test of Sphericity	Approx. Chi-Square	7382.197	
	df	528	
	Sig.	0.000	
	Total Variance Explained		
Component	Initial Eigenvalues	Rotation Sums of Squared Loadings	
	Total	% of Variance	Cumulative %
1	8.864	18.597	18.597
2	4.979	16.921	35.518
3	3.109	15.765	51.283
4	2.544	7.797	59.08

Source; (Survey Data, 2017)

Sampling adequacy was tested using the Kaiser- Meyer- Olkin Measure (KMO measure) of sampling adequacy. As evidenced in Table 4.17, KMO was greater than 0.5 (0.774), and Bartlett's Test was significant, $\chi^2 (528) = 7382.197$, p-value < 0.0001. Assessment of the total variance explained shows that the first component accounts for 18.597% of the total variance, the second component accounts for 16.921%, the third component accounts for 15.765% and the fourth accounts for 7.797% of the total variance explained. In total, the four components jointly explain 59.080% of the total variance with the first three accounting for 51.283% of the total variance explained.

Table 4.8: Components extracted

	SCMM	CRM	HRMM	FMM
ERP make it easier to establish and alter the parameters	0.878			
The country use ERP to handle procurement and supply	0.859			
The county uses ERP to ability to monitor, review and alter supply.	0.850			
The county uses ERP to track orders and fulfill them	0.843			
ERP provides complete visibility across the supply chain network	0.909			
ERP helps organization to have a control over all the suppliers	0.926			
ERP connect all the members across the network ...	0.715			
The county has installed ERP to integrate it citizen data ...		0.942		
Compares the characteristics of one citizen with another, for ...		0.926		
ERP manages county citizen integration using coordinated mix .		0.721		
ERP systems link citizens records with stakeholders, employees.		0.904		
ERP systems record information for all business licensed in the county and every department is linked to that information		0.595		
ERP enable response through convenient channels such as e-mail or.		0.554		
The county uses ERP to accurately maintain employee information			0.511	
The county uses ERP to track job applicant information such as.			0.670	
They county uses ERP for Payroll Paychecks, tax reports, ...			0.550	
ERP is employed in the county for Travel reimbursement and ...			0.833	
In the county ERP is means to arrange the time table for the ..			0.798	
ERP system is also used to analyze or forecast the human resource .			0.820	
ERP system assists the county governments in decision making ...			0.609	

ERP offers scientific management to recruitment costs	0.554
ERP system can record the attendance rate and other relevant ...	0.551
The ERP system will record data in a central database and keep relevant data timely for each evaluation index.	0.525
Integrating the compensation management system ..	0.854
The county uses ERP to monitor and operate financial transaction	0.685
ERP is used to control and track non-depreciating ...	0.797
The county employs ERP effective payment acceptance and get secure and full financial processing	0.520
ERP controls workflow management, multi-dimensional ..	0.673
The county uses ERP in budgeting and planning	0.552
ERP automate all the financial procedures,	0.782
ERP exclude the risk of errors in county financial management	0.791
ERP provide the clients with the bills as soon as possible and speed up payment processes	0.778
The county uses ERP in Production of transactions Paychecks, invoices, checks, purchase order	0.801
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.	

Source; (Survey Data, 2017)

The findings in Table 4.8 regarding the components extractions shows that all the 7 items for supply chain management module are grouped significantly on the first component which can be described as integration of the ERP system in the supply chain management module improves the procurement and supply processes, provides complete visibility across the supply chain network, enables control over suppliers, connects all members across the network and integrates citizen data. Furthermore, all the 6 items for CRM are loaded significantly on the second component and can be described as the ERP system

enables integration of citizen, suppliers, employees, and stakeholder data and enables maintenance and sharing of information. In addition, the findings show that 11 items loaded significantly onto the third component for HRMM and can be described as the ERP system integration is used in the improvement of various human resource functions in the department such as management of employees and their information and processing of payment. Finally, the findings also show that last 9 items loaded significantly on the last component for FMM and can be described as integration of the ERP has resulted in automation of many functions in the financial management module and has improved financial processes in the department.

4.8 Correlation Analysis

Correlation analysis is critical in any research undertaking. It is a measure of the existing relationship between the independent factors or variables and the dependent factor or variable and also between the independent factors. Correlation analysis provides a means of understanding the magnitude and direction of the existing relationship and provides a way of establishing whether there exists a linear relationship among the variables being examined. Generally, for scale measures, the Pearson Correlation coefficient is used to measure the relationships between the variables. Concerning the correlation coefficient, it varies between -1 and +1 with values close to -1 or +1 indicating a strong relationship while values close to 0 in either case are indicative of a weak relationship. The correlation coefficient is essentially a probability and when its square root is considered, coefficient of determination, it provides a means of inferring of the level of probability of the change in one variable would have on another variable under investigation. In addition, a negative relationship would imply that as one variable increases, there is a

probability that the other variable would decrease and vice versa. Furthermore, although correlations are important, they do not infer cause and effect relationship. Thus, the study sought to establish the nature of the relationships existing between the independent variables and the dependent variable by examining the correlation coefficients. Consequently, a correlation analysis of the independent factors and the dependent factor (county performance) was conducted, and the findings were summarized and presented in Table 4.9.

Table 4.9: Correlation matrix

	County performance	SC module	CRM module	HRM module
SC module	0.477** 0.000	1		
CRM module	0.677** 0.000	0.520** 0.000	1	
HRM module	0.717** 0.000	0.437** 0.000	0.676** 0.000	1
FM module	0.789**	0.403**	0.654**	0.711**

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

Source; (Survey Data, 2017)

From the findings in Table 4.9, the relationship between the SC module and county performance was found to be positive and significant, $\rho = 0.477$, p -value < 0.001 indicating that there is 47.7% probability that the county's performance will increase with increased integration of the ERP system in the SC module. Furthermore, the relationship between CRM module and county performance was found to be positive and significant, $\rho = 0.677$, p -value < 0.001 which shows that there is 67.7% probability that the county's performance will increase with increased integration of ERP system in the CRM module. Furthermore, the findings also showed that the relationship between HRM module and

county performance is positive and significant, $\rho = 0.717$, $p\text{-value} < 0.001$ which shows that there is 71.7% probability that the county's performance will increase with increased integration of the ERP system in the HRM module. Finally, the relationship between FM module and county performance was found to be positive and significant, $\rho = 0.789$, $p\text{-value} < 0.001$ indicating that there is 78.9% probability that the county's performance will increase with increased integration of the ERP system in the FM module. Finally, the inter-factor relationships showed that there were significant and positive relationships among the independent factors assessed.

4.9 Assessment of regression assumptions

Before conducting multiple linear regression analysis, the assumption of normality has to be tested to find out whether the data is obtained from a normally distributed population. The findings on normality test were presented in Table 4.10.

Table 4.10: Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
County performance	0.188	24	0.200*	0.873	24	0.196
SC module	0.195	24	0.153	0.871	24	0.044
CRM module	0.149	24	0.200*	0.966	24	0.870
HRM module	0.204	24	0.119	0.901	24	0.118
FM module	0.278	24	0.108	0.892	24	0.284

* This is a lower bound of the true significance.

Source; (Survey Data, 2017)

The multiple linear regression analysis requires that the errors between observed and predicted values (that is, the residuals of the regression) should be normally distributed. This assumption may be checked by looking at a histogram or a Q-Q plot. Normality can also be checked with a goodness of fit test (that is, the Kolmogorov-Smirnov test or Shapiro-Wilk test), though this test must be conducted on the residuals themselves. The findings in Table 4.10 revealed that all the variables do not violate the normality assumption, p -value > 0.05 basing on the Kolmogorov-Smirnov test.

The other assumption of multiple linear regression is homoscedasticity. Normally, a scatter plot of residuals versus predicted values is good way to check for homoscedasticity. In essence, there should be no clear pattern in the distribution; if there is a cone-shaped pattern (as shown below), the data is heteroscedastic. If the data are heteroscedastic, a non-linear data transformation or addition of a quadratic term might fix the problem. The findings in Table 4.11 revealed that basing on Levene statistic, homoscedasticity is not a problem, p -value > 0.05 . This essentially means that there is a linear relationship and there is no need to have a non-linear data transformation or quadratic term to fix.

Table 4.11: Heteroscedasticity

	Levene Statistic	df1	df2	Sig.
County performance	2.627	3	245	0.151
SC module	1.124	3	245	0.340
CRM module	0.442	3	245	0.723
HRM module	3.112	3	245	0.127
FM module	1.911	3	245	0.128

Source; (Survey Data, 2017)

Finally, multiple linear regression assumes that there is no multicollinearity in the data. Multicollinearity occurs when the independent variables are too highly correlated with each other. Multicollinearity may be checked multiple ways: Correlation matrix- when computing a matrix of Pearson's bivariate correlations among all independent variables, the magnitude of the correlation coefficients should be less than 0.80 in order to have no multicollinearity; Variance Inflation Factor (VIF) - the VIFs of the linear regression indicate the degree that the variances in the regression estimates are increased due to multicollinearity. VIF values higher than 10 indicate that multicollinearity is a problem. In addition, tolerance values of less than 0.1 indicate the presence of multicollinearity. The findings in Table 4.12 revealed that the VIF values for all the independent variables were below 10. This means that for all the independent variables, there was no presence of multicollinearity.

Table 4.12: Multicollinearity

	Tolerance	VIF
SC module	0.716	1.397
CRM module	0.436	2.293
HRM module	0.412	2.424
FM module	0.438	2.282

Source; (Survey Data, 2017)

4.10 Regression Model

The regression model was developed in order to enable the testing of the study hypothesis with the aim of providing answers to the achievement of the study objectives. First the model summary was assessed by examining the amount of variation accounted for by the

model as well as the analysis of the variance. Later the model was assessed by examining the estimated regression coefficients.

Table 4.13: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Sig. F Change
				R Square Change	F Change	df1	df2	
0.836a	0.698	0.693	0.311	0.698	141.228	4	244	0.000

a Predictors: (Constant), FM module, SC module, CRM module, HRM module

Source; (Survey Data, 2017)

The coefficient of determination explains the extent to which changes in the response variable can be explained by the change in the explanatory variables or the percentage of variation in the dependent variable (county performance) that is explained by all the independent variables. The results in Table 4.13 showed that all the predictors explain 69.8% of the variation in county performance (R-squared = 0.698, Adjusted R-squared = 0.693). The study findings in Table 4.13 indicated that the above discussed coefficient of determination was significant as evidence of F (4, 244) value 141.228 ($p < 0.05$) showing that the model was fit in predicting any change in county performance.

Table 4.14: Estimated Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.295	0.107		12.093	0.000
SC module	0.067	0.027	0.102	2.460	0.015

CRM module	0.112	0.038	0.156	2.929	0.004
HRM module	0.136	0.034	0.218	3.982	0.000
FM module	0.381	0.041	0.491	9.245	0.000
a Dependent Variable: County performance					

Source; (Survey Data, 2017)

The first hypothesis (H_{01}) stated that.

There is no significant effect of effect of supply chain management module on the performance of County governments. The findings in Table 4.14 revealed that integration of ERP in the SC module has a positive and significant effect on county performance, $\beta_1 = 0.102$, $p = 0.015$ and indicating that with each unit increase in the SC module, county performance increases by 0.102 units. This means that the hypothesis is rejected and the conclusion is that a supply chain management module in the departments of the county governments that has integrated ERP system would increase the county performance. Integration of the ERP system is costly for many organizations. Nonetheless, organizations have been able to achieve measurable, positive returns on ERP investments. But despite the many benefits of ERP-SCM integration, some companies are lagging behind for several reasons. This is mainly due to the initial investment to acquire and implement an ERP system. This investment is substantial and even after the system is up and running, the costs continue to mount (Business Intelligence Center 2012), this keeps many organizations from implementing ERP software.

Hypothesis two (H_{02}) postulated that:

There is no significant effect of customer relationship management module on the performance of County governments. The findings show that the integration of the ERP

system into the CRM module results in the CRM module having a positive and significant effect on county performance, $\beta_2 = 0.156$, $p = 0.004$ where each unit increase in the CRM module would result in 0.156 units in county performance. These findings mean that the hypothesis stating is rejected, and the conclusion is that integration of the ERP system within the CRM module has an incremental effect on county performance.

Hypothesis three (H_{O3}) hypothesized that:

There is no significant effect of human resources management module on the performance of County governments. From the findings, integration of the ERP system in the HRM module would result in the HRM module having a positive and significant effect on county performance, $\beta_3 = 0.218$, $p < 0.001$ where each unit increase in the HRM module results in 0.218 units increase in county performance. These findings show that the hypothesis is rejected, and the conclusion is that an ERP integrated HRM module has an incremental effect on county performance.

Finally, Hypothesis four (H_{O4}) hypothesized that:

There is no significant effect of financial management module on the performance of County governments. The findings show that integration of the ERP system in the FM module would result in the FM module having a positive and significant effect on county performance, $\beta_4 = 0.491$, $p < 0.001$ with this being the greatest effect among the four factors assessed. Each unit increase in the FM module in this case results in 0.491 unit increase in county performance. From these findings, the hypothesis stating that is

rejected and the conclusion is that an ERP system integrated FM module would increase county performance.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The purpose of this study was to determine the effect of ERP systems on the performance of County governments. This chapter presents the summary of the findings, conclusion and the recommendations. It concludes by indicating the suggested areas of further research.

5.1 Summary of the findings

5.1.1 Background characteristics

The background characteristics findings show that almost equal proportions between the number of males and females in the county departments. Furthermore, over 70% of the employees are aged between 20 and 40 years showing a largely youthful county workforce with over 94% of them having worked for between 3 to 6 years in the county government. The findings also show that all the employees are literate.

5.1.2 Effect of SMM on county performance

The findings have also revealed that a supply chain management module that has the ERP system integrated has a positive and significant effect on county performance. Despite this and the benefits highlighted of the ERP system integration, there are gaps that deny the county of the benefit of having cost-effective operations because of the lack of integration of the ERP system.

5.1.3 Effect of CRM on county performance

The findings on the effect of an ERP integrated CRM module on county performance has been shown to be positive and significant. More specifically, the findings show that ERP has been integrated into the CRM module of the county governments thereby bringing the benefit of citizen data integration, linking of citizen data with the various stakeholders and enhancing communication responses. However, there are challenges in terms of the capability of the ERP system to record information for all business licensed in the county which obviously requires a robust business registration system that would feed the ERP system.

5.1.4 Effect of HRM Module on county performance

The HRM module is at the core of an organization or institution because it is related to the critical human resource of the organization. The findings have showed that an ERP integrated HRM module in the county government has the potential of enhancing performance in the county government. The findings have showed potential benefits such as an integrated employee database that carries all information on resumes and personnel records, payment details, enhancing the decision-making process of the managers in terms of human resource through data comparison and supporting the recruitment process. However, there are challenges in terms of accuracy of employee information, use of ERP for payment, analysis and forecasting of human resource planning costs through integrated information and timeliness of the data.

5.1.5 Effect of FM module on county performance

Finally, the financial management module is the driver of all other functions in an organization because of its responsibility in availing resources to be utilized in running different projects. An inefficient FM module means that all other modules cannot be run effectively. The findings in this study show that an ERP integrated FM module has the capacity to increase the performance of the county government. This is especially if such a system is able to provide a means of monitoring transactions, control and track assets, provide security for financial transactions, provide financial planning processes and automate financial procedures. However, there are challenges cited such as the use of ERP in budgeting and planning and reduction in errors in financial management.

5.2 Conclusion

The study established the processes at COUNTY GOVERNMENTS are integrated in the system. The study also established that all the departmental information was integrated. The study found that supply functions in the organization were integrated into the system. All the transactions were integrated into the system. The established that the integration of the business processes have to a large extent enhanced the performance of the organization.

The study established that most departments in the organization largely operated on integrated systems. The study established that most of the functions in the organization's departments were automated. These included such functions as payments, filing of record, processing of records among others were automated. The automations had to a large extent enhanced the service delivery in the departments.

The study revealed that majority of the respondents indicated that ERP has to a large extent provided timely information from a single database. The results showed that ERP had provided complete information for decision making purposes. Majority of the respondents indicated that ERP had provided more consistent information for decision making while at the same time providing information for planning and control thereby enhancing the generation of information for decision making and reporting processes.

The results of the study showed that most respondents indicated that the generation of more accurate reports has been enhanced. The results established that the reports generated from the departments were more comprehensive and were timelier. The organization's intelligence had been enhanced while the identification of problems and opportunities is speedy and accurate. There were also reduced intermediate human nodes with the information process and the number of levels in authorizing and making decision.

The study established that the operational efficiency of the organization had been enhanced to a large extent. The study further established that most respondents attributed the improved efficiency in the organization to the adoption of ERP. Due to the adoption of ERP, the customers are today served fast, the payments of the suppliers are processed on time and the quality of services to the Nairobi residents had improved. The study therefore concludes that the implementation of ERP had positively impacted on the organization's performance.

5.3 Recommendations

The study established that most of the processes in the organization have been integrated which has improved the efficiency of the organization. The study recommends that all the

departments in the organization that are yet to be integrated should be integrated to reap the benefits of integration. The study also recommends that all public organizations should adopt ERP with the aim of improving their efficiency.

The study established that the adoption of ERP has enhanced the generation of timely information for quick decision-making purposes. The study recommends that all government departments and agencies should adopt ERP with the aim of enhancing accurate information processing for faster decision-making process.

The study further established that most functions of the organization had been automated which had enhanced the performance of the organization. The study recommends that all the functions in the organization should be automated by integrating all the function with ERP to improve the performance of the organization.

5.4 Areas of Further Study

This study was done on the County governments only. It is suggested that similar study should be replicated in other County governments countrywide. A similar study can also be done to include other government departments in Kenya.

REFERENCES

- Ahkiles, T. (1998, October 1). *Enterprise resource planning: what's there in it?* Wwww. Geocities.Com/CollegePark/Library/6045/Erp.Html. <https://doi.org/10.1002/kpm.114>
- Aladwani, A. M. (2001). Change management strategies for successful ERP implementation. *Business Process Management Journal*, 7(3), 266–275. <https://doi.org/10.1108/14637150110392764>
- Al-Mashari, M. (2001). Process orientation through enterprise resource planning (ERP): a review of critical issues. *Knowledge and Process Management*, 8(3), 175–185. <https://doi.org/10.1002/kpm.114>
- Al Mashari, M., & Zairi, M. (1999). BPR implementation process: an analysis of key success and failure factors. *Business Process Management Journal*, 5(1), 87–112. <https://doi.org/10.1108/14637159910249108>
- Al Mashari, M., & Zairi, M. (2000). Revisiting BPR: a holistic review of practice and development. *Business Process Management Journal*, 6(1), 10–42. <https://doi.org/10.1108/14637150010283045>
- Asgarkhani, M., & Young, A. (2010). Industry view of ICT roles and skills in Canterbury. *1st Annual Conference of Computing and Information Technology Research and Education*, New Zealand.
- Bailey, J. P., & Bakos, Y. (1997). An Exploratory study of the emerging role of electronic intermediaries. *International Journal of Electronic Commerce*, 1(3), 7–20. <https://doi.org/10.1080/10864415.1997.11518287>
- Bradford, M., & Roberts, D. (2001). Does your ERP system measure up? *IEEE Engineering Management Review*, 30(2), 20. <https://doi.org/10.1109/emr.2002.1022417>
- Buhalis, D. (2003). eAirlines: strategic and tactical use of ICTs in the airline industry. *Information & Management*, 41(7), 805–825. <https://doi.org/10.1016/j.im.2003.08.015>
- Chan, Y. E. (2000). IT Value: The great divide between qualitative and quantitative and individual and organizational measures. *Journal of Management Information Systems*, 16(4), 225–261. <https://doi.org/10.1080/07421222.2000.11518272>
- Dos Santos, B. L., Peffers, K., & Mauer, D. C. (1993). The impact of information technology investment announcements on the market value of the firm. *Information Systems Research*, 4(1), 1–23. <https://doi.org/10.1287/isre.4.1.1>

- Drucker P. F. (1988). Reflections on Drucker's coming of the new organization. *The International Journal of Technology, Knowledge, and Society*, 1(1), 76–83. <https://doi.org/10.18848/1832-3669/cgp/v01i01/56124>
- Duff, R. J. & Jain, M. (1998), CFO's guide to EDI: how can you control the new paperless environment? *The Journal of Corporate Accounting and Finance*, 10(1), 107-27.
- Faizal, M. (2005), *Institutionalization of performance appraisal system: a case study of the Maldivian public service*. A master's thesis submitted to University of Bergen Norway
- Gartner, N. (2005) Business process management's success hinges on business-led initiatives. *The International Journal of Technology, Knowledge, and Society*, 1(1), 76–83. <https://doi.org/10.18848/1832-3669/cgp/v01i01/56124>
- Gatautis, R (2008) The impact of ICT on public and private sectors in Lithuania. *Engineering Economics* 4 (59), 18–28.
- Hardy, C., & Reeve, R. (1999). Wu and Hahn's control complexity/control point orientation for computer information system (CIS) audits: an empirical test in an electronic data interchange (EDI) environment. *Managerial Auditing Journal*, 14(7), 339–350. <https://doi.org/10.1108/02686909910289821>
- Hayes, D. C., Hunton, J. E., & Reck, J. L. (2001). Market reaction to ERP implementation announcements. *Journal of Information Systems*, 15(1), 3–18. <https://doi.org/10.2308/jis.2001.15.1.3>
- Hitt, L. M., Wu, D. J., & Zhou, X. (2002). Investment in enterprise resource planning: business impact and productivity measures. *Journal of Management Information Systems*, 19(1), 71–98. <https://doi.org/10.1080/07421222.2002.11045716>
- Huber, G. P. (1990). A Theory of the effects of advanced information technologies on organizational design, intelligence, and decision making. *The Academy of Management Review*, 15(1), 47. <https://doi.org/10.2307/258105>
- Hunton, J. E., McEwen, R. A., & Wier, B. (2003). The reaction of financial analysts to enterprise resource planning (ERP) implementation plans. *SSRN Electronic Journal*, 57–64. <https://doi.org/10.2139/ssrn.302826>
- Hunton, J. E., Wright, A. M., & Wright, S. (2004). Retraction: Are financial auditors overconfident in their ability to assess risks associated with enterprise resource planning systems? *Journal of Information Systems*, 29(2), 235. <https://doi.org/10.2308/isys-10439>

- Kaplan, R S. and David P. N, (1992). The balanced scorecard—measures that drive performance, *Harvard Business Review*, (January-February), 70 (1) 71-79.
- Kaplan, R S., and David P. N. (2000). [having trouble with your strategy? then map it](#). HBR00509. *Harvard Business Review* , (September–October) 78(5) 167–176.
- Kohli, R., & Devaraj, S. (2003). Measuring information technology payoff: A meta-analysis of structural variables in firm-level empirical research. *Information Systems Research*, 14(2), 127–145. <https://doi.org/10.1287/isre.14.2.127.16019>
- Krumbholz, M., & Maiden, N. (2001). The implementation of enterprise resource planning packages in different organisational and national cultures. *Information Systems*, 26(3), 185–204. [https://doi.org/10.1016/s0306-4379\(01\)00016-3](https://doi.org/10.1016/s0306-4379(01)00016-3)
- Kumar, K., & van Hillegersberg, J. (2000). Enterprise resource planning: introduction *Communications of the ACM*, 43(4), 22-26.
- Lang, S., Masoner, M., & Nicolaou, A. (2001). An empirical examination of the influence of organizational constraints on information systems development. *International Journal of Accounting Information Systems*, 2(2), 75–102. [https://doi.org/10.1016/s1467-0895\(01\)00017-3](https://doi.org/10.1016/s1467-0895(01)00017-3)
- Markus, M. L., Axline, S., Petrie, D., & Tanis, C. (2000). learning from adopters' experiences with ERP: problems encountered, and success achieved. *Journal of Information Technology*, 15 (4), 245–265. <https://doi.org/10.1177/026839620001500402>
- Mayne, J., & Zapico-Goni, E. (1997). Monitoring performance in the public sector: future directions from international experience. *Choice Reviews Online*, 34(11), 34–6494. <https://doi.org/10.5860/choice.34-6494>
- Nah Fui Hoon, F., Lee Shang Lau, J., & Kuang, J. (2001). Critical factors for successful implementation of enterprise systems. *Business Process Management Journal*, 7(3), 285–296. <https://doi.org/10.1108/14637150110392782>
- Nicolaou, A. I. (1999). *Accounting information systems* Revised ed.Vol. 1. Benou, Athens.
- O'Leary, D. E. (2000). *Enterprise resource planning systems: Systems, life cycle, electronic commerce, and risk* 1st ed.: Cambridge University Press, Cambridge, UK.
- Orlale, L.M.N (2008), *Employee performance management practices in the Kenya local government sector: A case study of the county governments*. Unpublished Thesis of University of Nairobi, Kenya.

- Parr, A. N & Shanks, G (2000). A Taxonomy of ERP implementation approaches. *Proceedings of the 33rd Annual Hawaii International Conference* 1, 10.
- Peffer, K., & dos Santos, B. L. (1996). Performance effects of innovative IT applications over time. *IEEE Transactions on Engineering Management*, 43(4), 381–392. <https://doi.org/10.1109/17.543980>
- Prasad, B. and Harker, P.T. 1997. Examining the contribution of information technology toward productivity and profitability in U.S. retail banking. *Wharton School Working Paper 97-07*, University of Pennsylvania, Philadelphia.
- Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring organizational performance: towards methodological best practice. *Journal of Management*, 35(3), 718–804. <https://doi.org/10.1177/0149206308330560>
- Ross J. W. (1999). *The ERP revolution: surviving versus thriving*, sloan school of management, center for information systems research, MIT Cambridge, MA.
- Salterio, S. and Alan W., (2003). *The Balanced Scorecard Rhetoric versus Research: A properly implemented program can help articulate and communicate strategy*, CAMagazine, August, 39-41.
- Scheer, A. W., & Habermann, F. (2000). Enterprise resource planning: making ERP a success. *Communications of the ACM*, 43(4), 57–61. <https://doi.org/10.1145/332051.332073>
- Scott, R. W. (2003). *Organizations: Rational, Natural, and Open Systems* 5th ed. Taylor & Francis, New York.
- Shang, S., & Seddon, P. B. (2000,). *A comprehensive framework for classifying the benefits of ERP systems* [PAPER]. December 1–6, Americas Conference on Information Systems (AMCIS), New York, USA.
- Sheskin, D. J. (2003). *Handbook of Parametric and Nonparametric Statistical Procedures*: 3rd ed. Chapman and Hall/CRC, London U.K.
- Spanos, Y. E., Prastacos, G. P., & Poulymenakou, A. (2002). The relationship between information and communication technologies adoption and management. *Information & Management*, 39(8), 659–675. [https://doi.org/10.1016/s0378-7206\(01\)00141-0](https://doi.org/10.1016/s0378-7206(01)00141-0)
- Stefanou, J. C. (1999), *Supply chain management (SCM) and organizational key factors for successful implementation of enterprise resource planning (ERP) systems*, Proceedings of the Americas Conference on Information Systems (AMCIS), p. 800.

- Stefanou, J. C. (2002), *Accounting information systems (AIS) development/acquisition approaches by Greek SME*, European Accounting Information System Conference (ECAIS).
- Stoneman, P., & Kwon, M. J. (1996). Technology adoption and firm profitability. *The Economic Journal*, 106(437), 952. <https://doi.org/10.2307/2235366>
- Themistocleous, M., Irani, Z., & O'Keefe, R. M. (2001). ERP and application integration. *Business Process Management Journal*, 7(3), 195–204. <https://doi.org/10.1108/14637150110392656>
- Thune, S. S., & House, R. J. (1970). Where long-range planning pays off findings of a survey of formal, informal planners. *Business Horizons*, 13(4), 81–87. [https://doi.org/10.1016/0007-6813\(70\)90162-x](https://doi.org/10.1016/0007-6813(70)90162-x)
- Verner, L. (2004). BPM: *The promise and the challenge*. Queue 2,1 82–91 4
- Weill, P. (1992). The relationship between investment in information technology and firm performance: A study of the valve manufacturing sector. *Information Systems Research*, 3(4), 307–333. <https://doi.org/10.1287/isre.3.4.307>
- Wongrassamee, S., Simmons, J. E. L., & Gardiner, P. D. (2003). Performance measurement tools: the balanced scorecard and the EFQM excellence model *Measuring Business Excellence*, 7(1), 14–29. <https://doi.org/10.1108/13683040310466690>
- Wright, S., & Wright, A. M. (2002). Reply to discussion of information system assurance for enterprise resource planning systems: unique risk considerations. *Journal of information systems*, 16(1), 127–129. <https://doi.org/10.2308/jis.2002.16.s-1.127>
- <https://doi.org/10.2308/jis.2002.16.s-1.127>

APPENDICES

APPENDIX 1: LETTER OF INTRODUCTION

Department of Business Management,
Moi University,
P.O. Box. 3900,
Eldoret, Kenya.

Dear participants/Respondent,

RE: RESEARCH STUDENT INTRODUCTION LETTER

I am a post graduate student in school of business and economics, Moi University. I am currently pursuing Master of Philosophy degree in business Managements. In pursuing of my research topic entitled, EFFECT OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEMS ON PERFORMANCE OF COUNTY GOVERNMENTS IN NORTH RIFT ECONOMIC BLOC”, I wish to kindly request you to provide information to questions detailed in the attached questionnaire.

The research undertaken to treat the information given in strict confidence and will only be used strictly for academic purposes.

Yours faithfully,

Jennifer Mwilu

APPENDIX II: QUESTIONNAIRE

SECTION A: BACKGROUND INFORMATION.

For each item, please respond by putting a tick in the appropriate box.

1. Gender 1) Male 2). Female
2. Age: 20-29 yrs. () 30-40 yrs. () 40-50yrs () Above 50 yrs. ()
3. Highest professional/academic qualification.
- a). KCPE b). Certificate). Diploma
- d). Degree e) Masters f) PhD
4. For how long have you worked in your current department?
- a) 0-6 months b). 7-12 months c) 1- 2 years
- d) Over 2 years

PART B: SUPPLY CHAIN MANAGEMENT MODULE

What is your response to the following statements about Security in online shopping of your Service provider? Key: 1 =Strongly Disagree (SD) 2=Disagree (D) 3=Moderately Agree (MA) 4=Agree (A) 5 Strongly Agree (SA)

		SD	D	MA	A	SD
SCM1	ERP make it easier to establish and alter the parameters within which a supply chain is required to operate.	1	2	3	4	5
SCM2	The country use ERP to handle procurement and supply of the goods, services and other resources that are needed across the supply chain	1	2	3	4	5
SCM3	The county uses ERP to ability to monitor, review and alter supply chain efforts and activities in real-time to ensure cost-effective operations	1	2	3	4	5
SCM4	The county uses ERP to track orders and fulfill them when necessary	1	2	3	4	5
SCM5	ERP provides complete visibility across the supply chain	1	2	3	4	5

	network which is highly impossible in the manual process					
SCM6	ERP helps organization to have a control over all the suppliers and distributors	1	2	3	4	5
SCM7	ERP connect all the members across the network can share vital information like demand, forecasting reports, inventory levels, status of production, transportation plans and many more in real time	1	2	3	4	5

PART C: CUSTOMER RELATIONSHIP MANAGEMENT MODULE

What is your response to the following statements about your Ease of use?

Key: 1 =Strongly Disagree (SD) 2=Disagree (D) 3=Moderately agree (MA)
4=Agree (A) 5 Strongly Agree (SA)

		SD	D	MA	A	SD
CRMM1	The county has installed ERP to integrate it citizen data with a centralized data warehouse	1	2	3	4	5
CRMM2	compares the characteristics of one citizen with another, for determining each citizen segment	1	2	3	4	5
CRMM3	ERP manages county citizen integration using coordinated mix of interaction channels (multi-channel management),	1	2	3	4	5
CRMM4	ERP systems link citizens records with stakeholders, employees, suppliers and customers into the same database	1	2	3	4	5
CRMM5	ERP systems record information for all business licensed in the county and every department is linked to that information	1	2	3	4	5
CRMM6	ERP enable response through convenient channels such as e-mail or, for mobile-phone users, Short Message Service (SMS)	1	2	3	4	5

PART D: HUMAN RESOURCES MANAGEMENT MODULE

What is your response to the following statements about delivery of goods in online shopping of your Service provider? Key: 1 =Strongly Disagree (SD) 2=Disagree (D) 3=Moderately Agree (MA) 4=Agree (A) 5 Strongly Agree (SA)

		SD	D	MA	A	SD
HRMM1	The county uses ERP to accurately maintain employee information	1	2	3	4	5
HRMM2	The county uses ERP to track job applicant information such as Resumes, Personnel records	1	2	3	4	5
HRMM3	They county uses ERP for Payroll Paychecks, tax	1	2	3	4	5

	reports, accounting data					
HRMM4	ERP is employed in the county for Travel reimbursement and Training classes	1	2	3	4	5
HRMM5	In the county ERP is means to arrange the time table for the enterprises and staff flexibly according to the local calendar					
HRMM6	ERP system is also used to analyze or forecast the human resource planning costs by integrating relevant information					
HRMM7	ERP system assists the county governments in decision making of managers by simulating the performance of human resource planning and comparing the data					
HRMM8	ERP offers scientific management to recruitment costs					
HRMM9	ERP system can record the attendance rate and other relevant information by using a Telematics Control Unit (TCU)					
HRMM10	The ERP system will record data in a central database and keep relevant data timely for each evaluation index.					
HRMM11	Integrating the compensation management system with other systems) so that it can update relevant data in a timely fashion so as to establish a dynamic compensation calculation system.					

PART E: FINANCIAL MANAGEMENT MODULE

What is your response to the following statements about mode of payment in online shopping of your Service provider? Key: 1 =Strongly Disagree (SD) 2=Disagree (D) 3=Moderately Agree (MA) 4=Agree (A) 5 Strongly Agree (SA)

		SD	D	MA	A	SD
FMM1	The county uses ERP to monitor and operate financial transaction	1	2	3	4	5
FMM2	ERP is used to control and track non-depreciating or depreciating financial company assets	1	2	3	4	5
FMM3	The county employs ERP effective payment acceptance and get secure and full financial processing	1	2	3	4	5
FMM4	ERP controls workflow management, multi-dimensional information collection, dynamic assumptions and formulas and full financial planning statements	1	2	3	4	5
FMM5	The county uses ERP in budgeting and planning					
FMM6	ERP automate all the financial procedures,					
FMM7	ERP exclude the risk of errors in county financial management					
FMM8	ERP provide the clients with the bills as soon as possible and					

	speed up payment processes					
FMM9	The county uses ERP in Production of transactions Paychecks, invoices, checks, purchase order					

PART F: COUNTY PERFORMANCE

	Statement	5	4	3	2	1
CP1	The county has successfully implemented Projects within set out budget limits.					
CP2	The county projects meet their technical or social performance goals.					
CP3	Projects implemented meet their schedule objectives.					
CP4	Counties' project portfolio has an excellent balance of projects.					
CP5	Most of the projects implemented provide good returns.					
CP6	The customers are served fast					
CP7	The level of corruption in the ministry has been minimized					
CP8	The payment of the suppliers is processed on time					
CP9	The quality of services to the county citizen has improved					
CP10	There is no more time wasting in locating files					
CP11	Revenue has gone up					
CP12	Cost of operations have gone down					

Below is statement that your Department might have achieved since projects were implemented from the time devolution began. Please rate the following statements to the best of your knowledge.