

## **The Effects of Enterprise Resource Planning Systems on Firm's Performance: A Survey of Commercial Banks in Kenya**

**Evans Njihia**

Master of Business Administration,  
Jomo Kenyatta University of Agriculture and Technology,  
Kenya

**Fred Mugambi Mwirigi**

Corresponding Author,  
Jomo Kenyatta University of Agriculture and Technology,  
Kenya

### **Abstract**

*Enterprise Resource Planning (ERP) systems have transformed the way organizations go about the process of providing Information systems. This research discusses the issues of introducing ERPs into small and medium enterprises with the aim of finding the best ways to manage the change process to get a competitive advantage over its rivals. The study had five objectives of finding out how the financial resource availability, organizational complexities, employees perceptions, regulatory requirements, and having a top management support affects the effective implementation of an ERP system which in turn will affect the firm's performance. The research adopted a descriptive design employing the use of mainly questionnaires as the primary data collection tool. Data was collected using questionnaires and analyzed by finding out the mean, maximum, minimum, standard deviation and the correlation between the variables in the findings. The presentation of data was done by use of tables while hypothesis test was done by chi-square test of independence. All this was achieved by the use of Statistical Package for Social Science (SPSS V 20). This study found that financial resource availability, organizational complexities, employee's perceptions, regulatory requirements, and having a top management support all affects the effective implementation of an ERP system which in turn will affect the firm's performance.*

**Key Words:** *System, technology, Enterprise resource planning system, Information technology, competitive advantage, Small and medium sized enterprises*

## INTRODUCTION

Enterprise resource planning (ERP) is the generic term used for management software that include modules such as production, finance, marketing and human resources and that allow companies to plan their goods and services (Stevenson, 2007). According to Hossein (2004), Enterprise resource planning (ERP) systems integrate internal and external management information across an entire organization, embracing finance/accounting, manufacturing, sales and service, customer relationship management, etc. ERP systems automate this activity with an integrated software application.

The purpose of ERP is to facilitate the flow of information between all business functions inside the boundaries of the organization and manage the connections to outside stakeholders. This software, used by many enterprises, particularly by multinational corporations, has a critical role in ensuring increased efficiency. Zhao and Fan (2007) suggested that new generation ERP systems should be developed based on the principles of low cost, high quality and efficiency. In the recent years, ERP software have become widely used in almost all sectors such as production, services, finance, transportation and public utilities (Genoulaz& Millet, 2006). To give a few examples, Berchet and Habchi (2005) used an ERP system to arrange the supply chain activities of the telecommunications company Alcatel; Olson (2007) compared alternative ERP options and procurement of ERP systems as package programs and made a list of the advantages and disadvantages of both methods; Yan (2008) conducted a study aiming at identifying and proposing solutions to problems encountered in ERP applications in the Chinese retail sector; Karsak and Özoğul (2009) conducted a study on how to select the appropriate ERP software in decision making processes; Chou and Chang (2008) examined the effects of ERP applications on performance increase; Vandai (2008) studied the critical success factors in ERP application; Chang (2008) analyzed the performance effects of ERP on supply chain; Bose et. al. (2008) conducted a study on application of ERP systems in the supply chain management and inventory management of a company in the Chinese production sector; and Mabert (2003) studied the main differences between the ERP application approaches of companies.

### **Purpose of the Study**

This study offers valuable contribution to theory and practice. This study can be seen in the fact that the outcome can be applied in the development of an ICT policy framework as a guide for ERP adoption, which is relevant in most organizations' in Kenya which helps in promoting the economic growth. Further, the study creates a forum for further discussions on best practices to implement an ERP system. This will help organizations in not only looking at ERP just as any other technological adoption but looking at it as a strategic tool that will help an organisation to improve its performance and also towards competing effectively in the competitive field. This will basically give an organisation a competitive edge over its rivals. In this respect, the study sought to improve our understanding of the issues of ERPs as they apply in organizations in Kenyan Business and the best ways to apply towards their implementation.

### **Objectives**

#### **General objective**

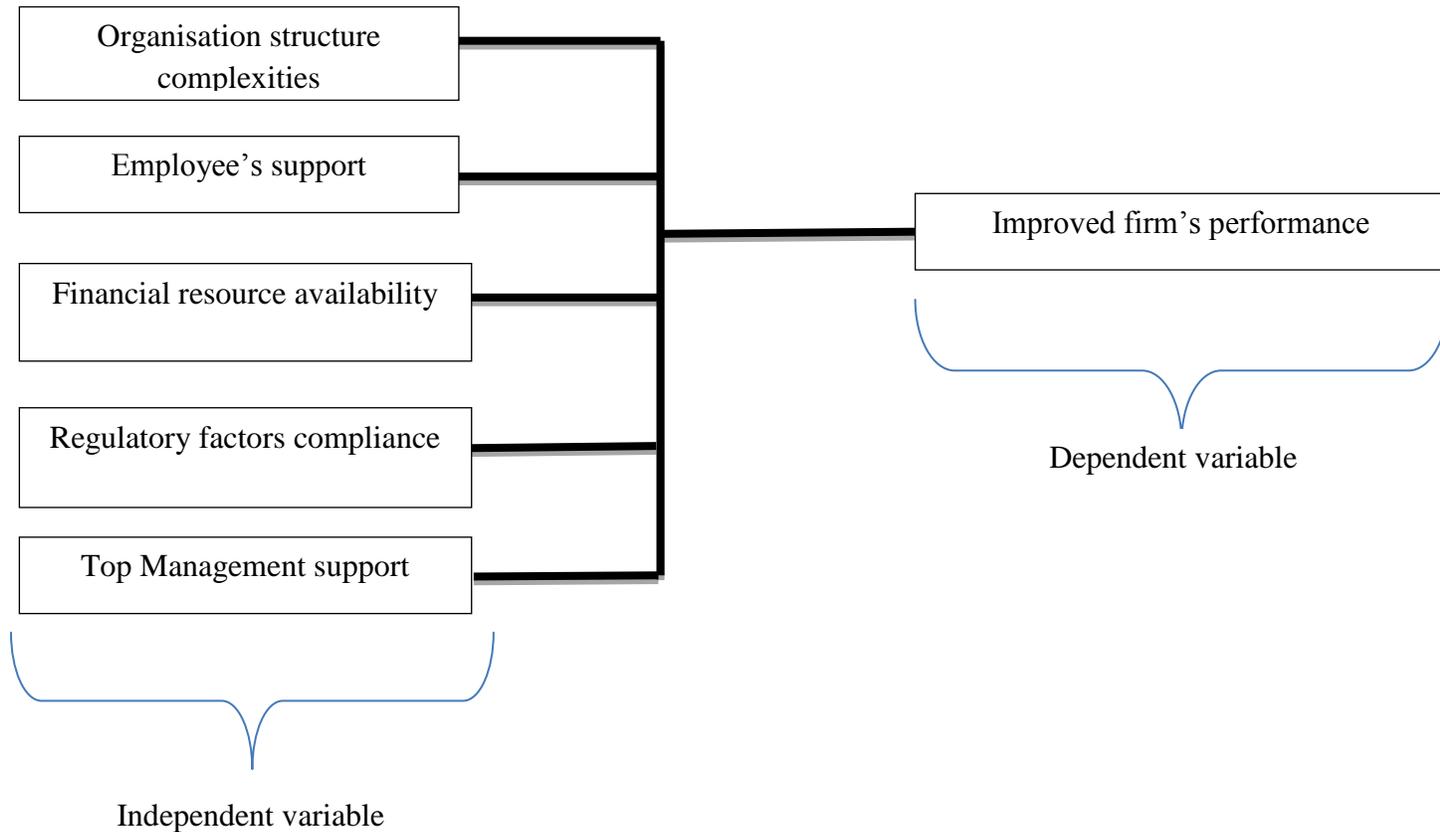
To investigate the effects of Enterprise Resource Planning systems on the firm's performance.

#### **Specific objectives**

- i. To investigate the effects of organizational structure on firm's performance.

- ii. To investigate the effects of employee support on firm's performance.
- iii. To investigate the effects of financial resource availability on firm's performance.
- iv. To investigate the effects of regulatory factors on firm's performance.
- v. To investigate the effects of top management support on firm's performance.

**Conceptual framework**



**Figure 1.1 Conceptual Framework (Source: Author)**

**LITERATURE REVIEW**

Enterprise Resource Planning is an enterprise-wide information system that facilitates the flow of information and coordinates all resources and activities within the business organization. According to Loundon (2009), ERP is a packaged business software system that lets an organisation automate and integrate the majority of its business processes, share common data and practices across the enterprise and produce and access information in a real-time environment. The various functions typically supported by the system include manufacturing, inventory, shipping, logistics, distribution, invoicing, and accounting. Some solutions now embed customer relationship management functionality. A wide variety of business activities that includes sales, marketing, billing, production, inventory management, human resource management, and quality control depend on these systems. The ERP system assists in managing the connections to outside stakeholders as well as enhancing performance management. It uses a centralized

database and usually relies on a common computing platform. It provides the user with a unified, consistent, and uniform environment.

According to the research that was done by Michael Burns (2009), ERP enables companies to break down traditional organization's silos, replacing them with a tightly integrated horizontal structure in which strategy, organizational structure, process and technology are closely aligned.

ERP solutions evolved from applications focused on materials requirements and resource planning and computer integrated manufacturing. The Enterprise Resource Planning term came about when software developers were searching for a name that would more aptly describe these broader systems (Gartner group, 1990). These new solutions provided functionality that encompassed other applications in addition to manufacturing. In the year 1990, the Garter Group employed the acronym ERP, as an extension of materials requirements planning, which later changed to manufacturing resource planning and computer integrated manufacturing. ERP came to represent a larger whole, reflecting the evolution of application integration beyond manufacturing.

### **Enterprise Resource Planning Systems**

Implementing an ERP system often constitutes a company's largest IS investment and in many cases the largest corporate project (Summer, 2000). This is more so in SMEs of developing countries where many of the operational, control and managerial systems have yet to be automated and where legacy systems are not as entrenched as in the businesses in the developed countries. It is then for this reason that many researchers have concluded by stating that, in developing countries, ERP systems are often implemented not to replace legacy systems but as part of an organization's effort to modernize and differentiate itself (Reimers, 2003). It is therefore for many organizations' to justify the enormous investments in ERP, they need to constantly ask whether such systems can provide them with the desired modernization and other sustainable advantages. As such, ERP as a strategic implementation clearly focuses the attention on strategic issues. One of the primary benefits of deploying a Full-Function ERP solution is the consolidation of often-dispersed data. The consolidation of data resulting from ERP use creates many organizational benefits that include: No need to synchronize changes between systems; Consolidates applications and brings more control to cross-functional processes for manufacturing, finance, human resources, marketing, and sales; Provides a real-time, enterprise-wide view of the business for faster and more effective decision-making; Shortens production lead times and delivery times; Helps build a common vision throughout the enterprise; Consolidates multiple permissions and security procedures into a single framework, which reduces the risk of losing or exposing sensitive data.

The benefits of ERP have been proven by a number of studies. The Aberdeen Group found the following quantifiable benefits from best-in-class ERP implementations: 22% reduction in operating costs, 20% reduction in administrative costs, and 17% inventory reductions (for manufacturing and distributing), 19% improvements in complete and on-time delivery, 17% improvements in schedule compliance (for manufacturing and distributing).

## METHODOLOGY AND RESEARCH DESIGN

The type of research carried was a descriptive research, where this describes data and characteristics about the population or phenomenon being studied. The descriptions used are frequencies, averages and other statistical calculations. From this, the researcher was able to make conclusions on whether effective implementation of ERP systems will affect the firm's performance and which in turn enable an organisation to achieve sustainable competitive advantage.

In addition this was a quantitative research where the research was concerned with the measurement of attitudes, behaviors' and perceptions and includes interviewing methods such as telephone, written questionnaire and interviewing as well as self-completion methods such as mail outs and online surveys.

The study targeted all the commercial banks using ERPs in their organizations. The target was population of 44 commercial banks in Kenya as listed by the Kenya finance directory July 2013. The study covered all the commercial banks that have a national coverage and are using the ERP systems in their operations.

## RESEARCH FINDINGS

The study was designed to examine the determinants that affect the implementation of ERP which in turn influences the firm's performance. Five objectives were stated based on factors influencing implementation of ERP. Five indicators were used to measure the influence of complexity of an organisation structure and implementation of ERP system. The indicators used were change accommodation, proper infrastructure, good data management systems, level of communication and strong organisational culture. Based on the responses a significant 80.56% affirmed that indeed that complexity of an organisation structure does influence implementation of ERP system. The Chi- square revealed a significant relationship between complexity of an organisation structure and the implementation of ERP system. This relationship accounts for about 62.3% of the factors influencing implementation of ERP system ( $\chi^2=0.632$ ). Change accommodation and proper infrastructure had chi-square results of more than 7.81 which was the expected at 5% significance and three degrees of freedom.

The second independent variable was employee perception. Employee perception and support were indicated by a number of pointers including effective adoption, satisfaction, level of resistance and support. The study revealed a majority of 90.3% of respondents were in agreement that employee's perception does influence the implementation of ERP system against a mere 9.7% who thought otherwise. The Chi- square revealed a significant relationship between employee's perception and the implementation of ERP system. This relationship accounts for about 52.9% of the factors influencing implementation of ERP system ( $\chi^2=0.529$ ). Tested at 4 degrees of freedom chi-square results of 20.115 which was beyond the expected at 5% significance and thus the null hypothesis was rejected.

Financial resource availability was the third independent variable that affects the implementation of ERP which in turn influences the firm's performance to be tested. This variable was indicated by costs, capital and manpower availability and whether the organisation has in place enough strategies to retain those employees who have been successfully trained in ERP. The study revealed that only 13% confirmed to have been involved at the planning stages while 70% were not involved in any ways. The study

revealed a majority 73.6% believed that this variable actually does influence the implementation of an ERP. The mode was clearly one while the mean was 1.2639 with a standard deviation of 0.44383. A correlation coefficient of 0.53 shows a moderate positive correlation between financial resource availability and implementation. A calculated chi-square of 22.813 necessitated the acceptance of the alternative hypothesis at 3 degrees of freedom and 5% level of significance.

The fourth variable was regulators, on the availability of regulators, the response in positive where 73.6% against 26.4% who were not in agreement. The chi-square values on the regulators are varied; internal control had 8.21 at 4 degrees of freedom, security controls had 21.509 at 3 degrees of freedom, corporate governance had 14.585 at 3 degrees of freedom and government regulations has 16.67 at 4 degrees of freedom.

Top management support was the last independent variable to be analysed a majority of 93.1% agreed that indeed the top management support is very necessary for the adoption of ERP system. The calculated chi-square of 15.193 at 3 degrees of freedom is larger than those in the chi-square tables. A correlation coefficient showed a moderate positive correlation of 0.459 between top management support and implementation of ERP system.

## CONCLUSION

A cross reference between the various schools of thoughts was suggests that a number of the variables influenced the implementation of ERP system and therefore the performance of an organization. Based on the findings of this study, it was revealed Organizational structure complexity affects the implementation of ERP which in turn influences the firm's performance. This finding corresponds to the works of Marsh (2000) on the implementation of ERP system in an SME. According to Ngai and Law (2006), ERP systems contain various modules that are intricately linked with each other, and hence they should be managed properly to ensure their accuracy. Zhang (2006) showed that the accuracy of the data has a positive impact on the success of the implementation of ERP systems. The findings also adds on to Kim, Lee and Gosain (2005), on their study on the impediments to successful ERP adoption and implementation they placed greater emphasis on understanding and sharing of sharing of information between project teams and communicate the outcomes and goals to all the pertinent parts of the organisation. The findings on organisation culture concurs with Bandura (1982) who suggest that organisation culture as a whole affects the productivity of the organizations' by affecting individuals and drastically affects the thinking of the employees in any organisation.

This study also concludes that employee perception affects the implementation of ERP which in turn influences the firm's performance. These findings are similar to those of Stebel (2005) who postulates that the effective adoption of an ERP system requires proper change management and an understanding of the organisation culture. According to Allen and Kern (2006) also, ERP projects require a balanced combination of the implementation teams that comprises of both technical and business competent personnel. In addition, Parr and Shanks (2000) in their journal on Model of ERP project implementation, points out that the decision maker in the project team should be empowered to make quick and effective decisions.

Based on the findings on financial resource availability, it is concluded that financial resource availability influences the implementation of ERP which in turn influences the firm's performance. This is in line with Foster (2008), who suggests that a well-constructed and implemented ERP solution should

reduce costs and increase productivity through improved operations. Kumar (2003), also explains that lacking an ERP solution, firms, especially manufacturers, find themselves struggling to compete and grow using applications that are functionally deficient, obsolete, and isolated from other applications and data and according to Gartner Group (1990), even though the price of prewritten software is cheap compared with in-house development, the total cost of implementation could be three to five times the purchase price of the software.

This study also finds that regulators affect the implementation of ERP which in turn influences the firm's performance. This corresponds to the work of Zhangkai (2006), who asserts that having poor corporate governance within an enterprise will have some effects towards the implementation of an ERP system. This entails the composition of board members and their control rights. He concluded by stating that, ownership concentration is one of the most important corporate governance variables and the lower the ownership concentration, then the better the corporate governance and less motivation for implementing ERP systems. According to a survey done by the National association of manufactures (NAM) it was found that the cost of complying with federal regulations is steep.

The study also concludes that top management support affects the implementation of ERP which in turn influences the firm's performance and this further the findings by other researchers including Holland (1999), who said that successful implementations require strong leadership, commitment and participation by top management. In addition, Khaled et al., (2008) in their research have emphasised that top management's support and the selection of the appropriate ERP system are major success factors for the implementation of successful ERP systems. This is to say obtaining an ERP system alone does not sustain or grantee the competitiveness of an organization unless the managers in charge are really welcoming to use these systems and the selection of the most appropriate type of ERP is deployed (Koh 2006). Ngai and Law (2006), on their research on the critical success factors of the adoption of ERP also emphasized that for the adoption of ERP to be effective, then the ERP project must receive approval and support from top management before it could be implemented. The top managers must be willing to become involved and to allocate valuable resources to the implementation effort. Davenport(2006) in his research on putting the enterprise into the enterprise systems emphasized the importance of mediation by the top managers. This is because; ERP projects span divisional boundaries' and affect many stakeholders in an organisation.

## **RECOMMENDATIONS**

The study findings make the following recommendations:

Attention needs to be placed on how organisation structure handles changes especially when changing from one system to the other, one respondent in this study was quoted saying "change is inevitable, the more you try to fight it the harder life gets". It is from this the study recommends that a multi-dimensional approach be used in implementation of change. An organisational structure must be put in that has proper infrastructure (hardware and software), good data management system, a reasonable level of communication with strong organisational culture.

The organisations implementing ERP system should systematically offer proper training development and other requisite support to ensure success in their endeavors.

From the findings of this study it is also recommended that proper retention strategies be put in place by the organisations so as not to lose employees who have been successfully trained in ERP.

It is also recommended that the top management should be at the forefront in championing the implementation process by providing leadership motivating employees and ensuring that all legal and other regulations are adhered to.

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