

**ENTERPRISE RESOURCE PLANNING SYSTEM ADOPTION AND
PERFORMANCE AMONG THIRD PARTY LOGISTIC SERVICE
PROVIDERS IN KENYA**

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DECLARATION

I, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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

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DEDICATION

I dedicate this project to my wife Triza and family, who have always encouraged and supported me throughout my life. They have been, and still are, the pillar of strength in my life. I thank you.

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ABBREVIATIONS AND ACRONYMS

3PL	Third Party Logistic
ANOVA	Analysis of Variance
ERP	Enterprise Resource Planning
IT	Information Technology
RBV	Resource Based View
ROA	Return on Assets
ROI	Return on Investments
ROS	Return on Sales
SME	Small and Medium Enterprises
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model

ABSTRACT

ERP systems has been expressed as costly, risky and complicated. However, times have changed and this perception ought to be revised so as to accommodate the recent technological advancement. Numerous researches have been done worldwide to identify the connection of ERP systems adoption and the performance of organizations but the findings have not been consistent. Thus the main aim of this research project was to find out the relationship of ERP system and performance of 3PL firms in Kenya. The following were the specific objectives of the study: (1) To determine the extent to which ERP systems has been adopted among third party logistic service providers in Kenya, (2) To establish the relationship between ERP adoption and performance among third party logistic service providers in Kenya and (3) To establish the challenges facing the implementation of ERP system among third party logistic service providers in Kenya. The research adopted the technology acceptance model, resource based view theory and the diffusion of innovation theory. A descriptive survey design was used in this research. The study population was all the 43 3PL firms in Kenya. The target respondents were the operation managers or their representatives. Questionnaires were used to collect primary data, that were sent by email as well as drop-and-pick methods. The data was analyzed using frequencies, percentages, mean, standard deviation and correlation and regression analysis. The study found that ERP Systems have been adopted to a large extent. The study found a significant positive relationship between ERP adoption and firm performance. The challenges related to ERP adoption were experienced to a large extent. Regression analysis found that the collective adoption of ERP systems was responsible for 42.1 percent of the changes in performance of these companies. According to the findings of this survey, ERP adoption is critical for businesses looking to improve their performance. Based on the findings, materials management had the greatest influence on performance followed by distribution management while quality management and production planning had the least influence on performance of 3PL firms in Kenya. Managers as well as shareholders of companies that have yet to implement ERP systems are advised to do so in order to remain competitive and profitable in this challenging business environment. It is also suggested that 3PL firm management develop sound policies to assist them in overcoming the problems of ERP system deployment.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In the modern world, the priorities of most business leaders have shifted to saving costs and managing growth. This is mainly attained by utilizing the existing market share, better understanding and interacting with customers, innovating products and services. Saving costs suggests reducing spending and increasing earnings through improving productivity, automating processes and eradicating inefficiencies. Adoption of technology helps business to realize these advantages (Hudd, 2016). One such technology system is Enterprise Resource Planning (ERP). In the current times ERP is not just an advantage but it is a must for an organization. Globalization of markets is the cause of transition from “nice to have” to “must have”. Currently, a company that does not have ERP is disadvantaged of some efficiency compared to its competitor, and the choice to implement one has a major impact on its organization performance (Seethamraju, 2015).

This research was founded on three theories comprising of firm’s resource-based view theory, diffusion of innovation theory as well as the technology acceptance model. Penrose's (1959) resource-based view is a theory of firm performance that focuses on how a corporation's resources and capabilities permit it to attain better performance. The resources possessed by a company, as well as technical advancements, possesses a substantial impact on the development of increased performance (Davis, 1989). Technology Acceptance Model (TAM) explains the how customers accept and utilize innovation. The model says whenever a consumer is given a new innovation, certain components influence their choice on the manner in which and the time upon which they will utilize it (Rogers, 2003). Diffusion of innovation entails communicating an idea that

is regarded to be new to the social system members using certain chosen models. It is important for an innovation to be widely accepted so as to remain sustainable (Barney, 1991).

Third Party Logistic (3PL) service providers are finding it necessary to adopt ERP systems in running their businesses. This need arises because some of the challenges faced by 3PL firms can easily be overcome by adopting an ERP system. Such challenges include managing the parcel records, difficulty in monitoring the riders, messengers, drivers and delivery activities and locations because of the myriads of variables involved such as traffic, lack of parking as well as effects of motor vehicle breakdowns (World Bank, 2018). 3PL service providers are now embracing ERP systems because of the benefits which include real time data, standardization, information visibility and integrated best practises. In addition, 3PLs are digitizing and innovation is now a cornerstone in many of their business which is why they have confidence to invest in ERP systems (Seethamraju, 2015).

1.1.1 Enterprise Resource Planning System Adoption

An ERP system is a business software system that enables an organization to automate and integrate its various function and processes for instance marketing, sales, logistics, finance and human resources (Mukwasi & Seymour, 2015). The systems in additions offer a linkage to the different business departments which allows interaction among the departments. Many business departments in the past have worked as silos where it was impossible for one department to tell what the other department is doing. However, in the modern highly competitive business environment, it is necessary that the different business departments interact among each other (Chen, Lee, & Tu, 2016).

ERP systems thrive through their ability to provide value addition to an organization through making sure that organizational resources are utilized efficiently. Through integration of the business resources these systems enable businesses to perform various tasks with ease such as human resource management, financial control, inventory management, purchasing, product planning and production process (Mukwasi & Seymour, 2015).

As companies endure to pursue means to minimize costs and use the technology available to realize the anticipated objectives, the adoption of ERP systems has had to be examined (Hofmann, 2008). In Europe, some part of North America and in Asia Pacific countries, the ERP system has been widely implemented (Guo, 2009). However, the adoption of ERP is a problem for firms in developing countries like Kenya, due to the high cost of capital and the lack of information technology (IT) skills (Nthoiwa, 2010). Introduction of enterprise resource planning system in 3PL firms have contributed to improving the firms' market focus, to make them more effective, to make better use of their human capital and to boost their competitiveness. ERP adoption is expected to translate to better service delivery and in essence enhanced firm performance. Chen et al. (2016) operationalized ERP adoption in terms of integration, materials management, production planning, distribution management and quality management.

1.1.2 Firm Performance

Firm performance is the attaining mission of an organization through efficient management, continuous efforts as well as good governance to attain goals (Richard, Yip, Johnson & Devinney, 2009). The type of operations that a company performs in order to

meet its objective determines its performance. The visible criteria that indicate an organization's performance are the eventual outcomes (Valmohammadi & Servati, 2011).

There has not been agreement on what constitutes an ideal measure of a company's performance. This is owing to the fact that there are many differing viewpoints on what constitutes as an adequate result of a firm's effectiveness. Performance measures focus on internal procedures to determine how successful and efficient an action is in relation to the metrics provided. The performance indexes are proxies for the organization's phenomena (Henri, 2003).

As Richard et al. (2009), an organization's performance is made up of the following specific firm outcome areas: financial performance as measured by profits, product market performance as measured by sales, Return on Investment (ROI), Return on Assets (ROA), shareholder return as measured by additional economic value, total shareholder return, as well as market share. Nevertheless, financial measures pose a challenge in that some firms do not have adequate records coupled with the fact that there are other aspects of performance that cannot be quantified in financial terms (Bryce & Useem, 1998). Wilding and Juriado (2004) identified inventory turnover, order fill rates and delivery timeliness and accuracy as some performance measurements of 3PL providers. The current study will adopt customer satisfaction, delivery timeliness, market share, profitability as well as efficiency as firm performance metrics.

1.1.3 Challenges Facing Adoption of ERP Systems

Al-fleit, Almalki and Zafar (2017) reveal a number of challenges that arise in any organization during the adoption of ERP systems. The challenges can also be categorized into challenges related to leadership, human challenges, technical challenges and other

challenges. Lederer and Sethi (1991) indicate that top management in most organizations wants to be persuaded to implement any ERP system developed.

Aaltonen and Ikävalko (2002) expounds the management challenge to include, little or no support from top management for ERP system adoption, weak management roles in ERP system adoption, lack or inadequate support from top management in creation and implementing systems and poor coordination and communication to ensure responsibilities are well articulated. Wilson (1989) in his study of 500 companies in the United Kingdom (UK) found that not employing professional staff, inadequate resources for user training, the rapidly changing needs of the ERP system users and inability by systems to fulfil the user's expectations as the main human challenges faced in implementation of ERP system.

1.1.4 Third Party Logistic Service Providers in Kenya

Third party logistic firms are those firms that are in the business of performing the outsourcing of transportation services. This involves any activities related to storing, shipping, or delivering a firm's products. Typically, a 3PL firm takes an embedded approach to managing a client's transportation and supply chain. According to Njambi and Katuse (2013), the significance of 3PL is that it provides a quicker and cheaper mode for companies to transport their products not only within the country but beyond. Companies appreciate that fact that 3PLs offer an opportunity for improved competitive gain. Due to their superior position and emerging capabilities, 3PLs may be perceived as strategic participants in supply chain management compared to the pure suppliers of a particular company.

According to Hertz and Alfredsson (2013) there are several types of 3PLs such as transportation based 3PLs who specialize in offering of transportation services to respective customers, warehouse or distribution based 3PLs who concentrate on storage and distribution of goods from warehouses and forwarder based 3PLs providers act as middlemen with forwarder roles (Vishwanath, Srinivasa, & Anuradha, 2016). Additionally, there are shippers or management based 3PLs providers who focus on the management of the shipping process from start to finish, financial based 3PLs that provide auditing and other freight services and information-based 3PLs which specialize on offering of services that range from internet-based services to electronic operations of logistics and transportation services (Robinson, 2014).

The 3PL industry in Kenya is growing very fast and is attracting more and more investors. The logistics industry contributes a lot to the economy of the country. KNBS (2021) indicates that in 2019, logistic sector contributed to 6.2% of the GDP. 3PL service providers have faced challenges ranging from competition, legal issues and increased operational costs. Other problems and difficulties experienced by organizations in logistics business are poor delivery, reporting and notification, administration headaches and escalating overheads (World Bank, 2018). Some of these challenges can be addressed if the firms adopt IT systems such as ERP.

1.2 Research Problem

ERP systems have often been related to the concept of being costly, risky and complicated. However, times have changed and this perception ought to be revised so as to accommodate the recent technological advancement. Numerous researches have been done worldwide to identify the connection of ERP systems adoption and the performance

of organizations. Parto and Sofian (2016), investigated the effects ERP has on financial performance in a developing nation. The result shows that each ERP system module influences separately the financial performance pointers. Liu and Miao (2010) studied the effects of ERP systems on companies' performance by studying the Chinese chemical companies. The results showed no significant improvement in performance during adoption and reduction in performance in the first two years after adoption. A study done by Arunachalam et al. (2006) in China examined integration of ERP with various supply chain systems of manufacturing firms revealed that ultimately robust ERP systems implementation does not lead to improved ability of an organization to achieve its desired demand forecasting capacity and flexibility of supply systems. This shows that from previous studies, there is no consent on the correlation between the study variables.

The Kenyan 3PL Service Providers play a key role in moving inventories on behalf of organizations from one place to another. The 3PL service providers have faced challenges relating to poor delivery, reporting and notification, administration headaches and escalating overheads which can be addressed by adoption of ERP system. While there has been increased adoption of ERP systems by various sectors, the logistics industry has been slow in this uptake and customers have to call or visit to receive service while there is a chance of processing all this remotely (World Bank, 2018). Mukwasi and Seymour (2015) attributes this to challenges such as scarce organizational fit, absence of skills, absence of proper user training and involvement, inadequate software design, lack of enough management skills and strategy. Despite understanding the benefits associated with adoption of ERP systems for instance integrated processes, standardization, real time data, visibility of information, systems adoption remain to be the main concern (Al

Ghofaili & Al Mashari, 2014). In order for 3PL firms to increase productivity, improve efficiency and to generate revenue and as a result lead to business growth, they are forced to automate their system so as to attain efficiency (Hudd, 2016).

Locally, Wanyoike (2017) studied ERP system impact on engineering consultancy companies' performance in Kenya and found out ERP had a positive result for nearly all the performance aspects. Contrary hand, Karimi (2017) examined impacts of ERP adoption on the performance of companies in Kenya's transport sector and found that ERP has a non-statistically significant relationship with performance. Mjomba and Kavale (2015) studied ERP impact on the KPLC performance and found a number of impacts. The impacts include reduction in the operation costs, efficiency in management, increased profitability, and competitive advantage.

From the review of studies, it is clear that there is no consensus on the nature of relationship between ERP adoption and firm performance with some studies reporting a positive correlation whereas others no significant correlation. There are also challenges in ERP adoption such as scarce organizational fit, skills absence, improper user training and involvement, lack of enough software design, lack of enough management skills and strategy. Furthermore, from the current literature, it is not apparent what the extent of ERP systems adoption of the 3PL service providers in Kenya is and how the outlook impacts their performance. It is yet to be investigated to find out if the adoption of ERP system would improve 3PL service providers' performance to readjust its capacities to being competitive globally. Henceforth this has led to the current study on the correct linkage of ERP systems adoption and performance among 3PL service providers in Kenya. Therefore, this research aimed to build knowledge in this sector by responding to

the question: What influence does ERP systems adoption have on performance of third-party logistic service providers in Kenya?

1.3 Research Objectives

The research's objective was to examine the effect of enterprise resource planning system on performance of third-party logistic service providers in Kenya.

The specific objectives were:

- i. To establish the extent to which ERP system has been adopted among third party logistic service providers in Kenya
- ii. To establish the relationship between ERP adoption and performance among third party logistic service providers in Kenya
- iii. To establish the challenges facing the implementation of ERP system among third party logistic service providers in Kenya.

1.4 Value of the Study

This study will contribute significant to theories on ERP system adoption and firm performance. The research may contribute to future references for future academicians. The study may identify further areas of research by highlighting related topics critiquing to identify research gaps. The study contributes significantly to digitalization and organizational performance.

Policy makers will be open-minded by the research results, through displaying to them how ERP system adoption influence performance of 3PL service providers in Kenya and thus identify ways of being used by regulators in improving performance of similar firms

that are a part and parcel of attaining Vision 2030. This study will be aimed on assisting those companies that have not implemented ERP systems. The management of these organizations will have the ability to identify ERP practices which are appropriate to them so as to improve performance.

Conclusions from the research will too form a basis for effective implementation of ERP system. Practitioners will also find the finding of the study beneficial in formulating and implementing policies to improve organizational performance. Firms will also benefit from the findings by appreciating the benefits of ERP systems and find out more on the additional benefits they can derive from ERP system for achievement of optimal performance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter literature review pertinent to the research is reviewed so as to address the research problem. The reason for the review is identifying the gap and increase the knowledge on ways that ERP systems adoption will facilitate achievement of better performance at 3PL service providers in Kenya.

2.2 Theoretical Literature Review

In this segment theories that are pertinent to the correlation between ERP systems adoption and performance is reviewed. Three theories that form the theoretical basis of this research are discussed in this segment and they are namely; Technology Acceptance Model (TAM), resource-based view theory and diffusion of innovation theory.

2.2.1 Diffusion of Innovation Theory

This theory was pioneered by Rogers (1962). According to the theory, an innovation is a new object, activity, or concept introduced into a social framework, whereas innovation diffusion is the process whereby the novel idea is conveyed into the social system over time via a planned channel. Contextually, the theory attempts to explain the way that new inventions, for instance internet banking, mobile banking are accepted and applied in a social system (Clarke, 1995). Robinson (2009) criticizes the spread of innovations since it has a very different perspective than other theories of change. It doesn't strive to persuade people to change; rather, it sees change as primarily about the evolution or reinvention of products and character to better suit the individual's interests and needs. People do not change, according to this belief, but innovation should be in line with people's wants.

The process of innovation acceptance, as per Sevcik (2004), takes time and is not something that happens overnight. He goes ahead to contend that, resistance to change greatly affects diffusion of innovation and this delays the process of adopting an innovation. Key attributes that affects innovation adoption process are five namely complexity, compatibility, observability, relative advantage and trialability (Rogers, 1995). According to Rogers, the extent of new innovation adoption is determined by how a company views these traits. If a Kenyan 3PL service provider company understands the benefits of implementing an ERP system, once alternative tools are available, this innovation will be embraced. This theory is pertinent to the current research since it illustrates on how innovation like ERP systems are adopted by organizations.

2.2.2 Resource Based View Theory

Penrose (1959) proposed the RBV theory, which gives the description of firms as sources of, capabilities, competencies and resources. If such capabilities are exclusive, it becomes difficult for them to be imitated which gives them a distinctive competitive edge (Penrose, 2003). This theory further stated that the resources of a firm should be considered together with the focus of firms on services and products (Wernerfelt, 1984). Subsequently, different researchers stated if it has resources that are less likely to be imitated or substituted (Barney, 1991; Eisenhardt & Martin, 2000; Ravenswood, 2011). Researchers like De Toni and Tonchia (2003) and Hart (1995) criticized the theory because it under-emphasized the role played by the external environment factors to the firm and its industry.

The RBV theory links to the current study because the study sought to determine if ERP system adoption lead to improved performance of 3PL service providers in Kenya. If the

reason for the performance of 3PL service providers in Kenya would be the added resources that ERP systems provide, the study findings would then back RBV. The findings would support the notion that resources provided by ERP systems are relevant since they create added value to the new entities. If found to be beneficial, the analysis will analyze if the structural or process components of the RBV theory were utilized and whether the criticisms made by De Toni and Tonchia's (2003) would be applicable to the results. Contrarily, if the ERP systems are not responsible for enhancing 3PL performance, then the resources that they provide cease to be relevant to the firms.

2.2.3 Technology Acceptance Model

Davis (1989) proposed this theory, which is too known as the TAM. This model focuses on client adoption behavior and evaluation, which is typically carried out with the goal of developing a system that will not only be valuable to customers but also convenient for them. Prior scholars looked at TAM's main notion of validity in determining individual acceptance and came to the conclusion that TAM's main concepts fails to explain how technology and other usability aspects influence user acceptance (Moon & Kim, 2015). According to Davis (1989), expected usefulness refers to an individual's opinion that the technology or information system adopted would considerably increase job performance following implementation. The perceived use ease refers to how simple it is for a person to learn in what manner to utilize new technologies and information systems. TAM places a premium on ease of use as a predictor of a system's utility (Gefen, Karahanna & Straub, 2013).

Numerous researchers believe that while determining whether or not to embrace a technology, its perceived utility is critical. According to Tan and Teo (2013), the

perceived usefulness of a technology influences its adoption. Finally, when electronic banking methods are regarded to be more useful, the likelihood of them being implemented increases (Potaloglu & Ekin, 2015). The TAM variables are seen to be the main determinants of ERP system acceptability. This theory applies to the current study since it states that in order for ERP systems to be implemented, they must first achieve user acceptability, which will be based on their ease of use. As a result, if an ERP system does not obtain acceptability, its adoption will be minimal, and as a result, it will have little impact on performance.

2.3 Enterprise Resource Planning System Adoption

Enterprise resource planning denotes software packages that have various modules for instance sales, human resource, production and finance offering integrated information to different departments within organization via the important embedded business processes. As indicated by various scholars, Adaileh and Abu-algam (2010) and Baymout (2014), and ERP system is an information system model that different department in an organization use to communicate. It standardizes the data processing procedures, improves international coordination and integrate operations data of departments

ERP systems perform a crucial supporting role in firms and industries. Abugabah and Sanzogni (2010) indicates that ERP is greatly responsible for optimal performance of industries like banking industry. Njihia and Mwirigi (2014) further noted that these systems facilitate a variety of activities in the modern companies such as invoicing, sales, human resource, marketing, production and quality control thereby enhancing the overall performance of an organization by enabling these relevant processes. In a similar

observation, Motwani (2016) noted that ERPs are of great importance to an organization as they improve its performance.

The dimensions of an ERP comprise of integration, production planning, inventory management, procurement, quality management and distribution. Integration is an inter-departmental cooperation using common information system. Shatat and Udin (2012) contend that integrations lead to minimization of costs and improvement of overall visibility of supply chain. Inventory management is a collection of process which comprise of activities involved in acquiring different types of inventory, managing how they are stored and controlling them as they are moved in various stages of manufacturing. Through ERP systems the control and optimization of inventory is made easier. Using a variety of historical data as well as sales forecasts, utilization of production, input parts, capacity, materials and components is enhanced by using ERP production planning. In addition, Chenhal (2003) describes controlling as a performance evaluation technique and takes the requisite steps to achieve the ultimate intended result as expected. The ERP Control Module provides an essential support for the business enterprise's work process.

Currently, there is a wide adoption of ERP systems by different organizations due to the huge transformation in companies caused by customers' demand of lower prices, wider choices, and fast services. The transformation of companies has also been caused by factors like the need for standardization of processes, globalization, and exceedingly changeable expectations of clients. ERP systems are utilized in both small-medium and large companies to promote efficiency in responding to these challenges.

2.4 ERP Systems Adoption and Firm Performance

ERP systems are important systems in making sure that an organization is successful. These systems ensure increased accountability through the supply chain as they effectively remove distortions of information. In addition, they increase the speed of information as they make sure that data is transmitted instantaneously. Therefore, professionals consider adoption of ERP system as an ideal solution to the numerous problems that organization have been facing in the past decades. Parto and Sofian, (2016), reported that companies that adopted ERPs a few years ago are performing well today. However, it is noted by Poston and Grabski (2010) that there was no noteworthy improvement linked to residual income, administrative expenses, or amount of sales in every year after the adoption of the ERP systems.

Wanyoike (2017) studied the impacts of ERP system on performance of engineering consultancy companies in Kenya. A descriptive research design was adopted and the study population was made up of all workers in engineering consultancy firms where a sample of 41 worked were selected for the research. Data analysis was achieved through inferential as well as descriptive statistics. The study revealed that ERP systems positively affected the firms' performance. The study in addition showed that participants believed that ERP systems had a positive result on nearly of performance aspects like ROI, profitability of the firms, market share, operational costs and competitive advantage.

Karimi (2017) researched the ERP adoption effects on the performance of companies in the Kenyan transport industry. The research population consisted of 300 managers from small and midsize enterprises (SMEs). Qualitative data was congregated via

questionnaires and evaluated via inferential and descriptive statistics through SPSS. Multiple regression analysis was utilized in the research to establish the relations between ERP systems adoption and the performance of organization. From the study analysis, communication was found to have a non-statistically important relation with performance.

Parto and Sofian (2016) investigated the effects of ERP on performance in a developing nation case of Iranian manufacturing firms. The data utilized in this research was gathered using questionnaire in Iranian manufacturing companies that had embraced ERP system. Seventy-nine companies were identified and a questionnaire survey that applied both postal mail and email were used. Structural equation model was used to assess the hypotheses using the multivariate statistical method Partial Least Squares. The finding revealed that the adoption of each ERP system module influences separately the performance pointers.

Mjomba and Kavale (2015) studied effects of ERP on the performance of the Kenya power and lighting company. The researchers used descriptive research design and a sample size of 125 respondents. They collected the data using questionnaires which the researcher developed and administered using research assistant and then evaluated through SPSS software and the outcomes of the research presented in frequencies using figures and tables using ANOVA. The research showed that the organizations experienced management efficiency, lowered operation costs, increased profitability, and competitive advantage. All the factors had immense impact on the performance of the organization.

Nzama (2015) examined the impacts of ERP systems on the financial performance of sugar firms in Kenya. The target population included 152 licensed business system users of ERP systems in the sugar companies, and the study sample consisted of 48 business system users, 32 of the 48 licensed business system users responded to the survey. However, 27 respondents were usable for the study. The study adopted a descriptive research and was carried out among three selected sugar millers. The data was evaluated using SPSS version 20 where inferential and descriptive tools like Analysis of Variance (ANOVA) and mean were applied. The outcome was statistically significant with positive linear relations between ERP and financial performance of sugar firms. On the other hand, organizational factors were found to affect moderately the relations between ERP systems and financial performance of sugar companies.

Hunton, Lippincott, and Reck (2013) studied ERP systems by contrasting performance of companies that have adopted and those that have not adopted the systems in Russia. The researchers evaluated the longitudinal effect of ERP adoption on the performance of a company by matching 63 companies. The data was evaluated using SPSS version 20 where inferential and descriptive tools like Analysis of Variance (ANOVA) and mean were applied. The study showed that noteworthy differences occur in the current research because the financial performance of non-adopters went down over time while it remained stable for adopters. The study also reported a noteworthy relation between the size of a company and its financial health for organizations that adopted ERP with regards to ROI, ROA and return on sales.

From the foregoing, although there are empirical studies in this area. The results of the previous studies have been inconsistent with some positing a positive relationship while

others find no relationship at all. These inconsistencies can be explained by different operationalization measures applied by previous researchers. In addition, the previous studies have also been carried in diverse context therefore their conclusions cannot be generalized to represent 3PL service providers in Kenya

2.4 Challenges faced in Adoption of ERP Systems

There are many challenges that organizations encounter when implementing and adopting ERP systems. In spite of the existence of Software as a service model for the provision of ERP systems on top of onsite enterprise resource systems, the adoption of ERP has remained a major challenge (Al Ghofaili & Al Mashari, 2014). Mukwasi and Seymour (2015) described these challenges to include scarce organizational fitness, lack of skills, lack of proper user training and involvement, lack of enough software design, lack of enough management skills and strategy

Mostly ERP Systems are considered to be too rigid and problematic to adjust to certain business processes and workflow in some organization and this has been noted to be among the key cause of their failure. The system may suffer from the "weakest link" problem and one partner or department inefficiency might affect other participants. In order for other applications to function effectively most of the integrated linkages ought to have high degree accuracy. An organization may meet minimum standards, but instead, over time, "dirty data" may reduce the reliability of certain applications. The switching cost are quite high for an organization once a system is established (reducing strategic control and flexibility at the corporate level). When organizational boundaries are blurring, this can lead to accountability problems, morale of employee and division of responsibilities. Resisting to exchange sensitive internal information amongst department

can lead to the effectiveness of the ERP system being minimized (Madininos, Chatzouides & Tsairidis, 2012).

According to Mukwasi and Seymour (2015) high rates of failure of ERP systems have been reported. There have been several causes that have been attributed to the failure amongst them being non willingness of users to use the systems, improper system implementation and poor choice of the ERP systems. In the past, the ERP systems implementation has always been a concern for most companies since it has been costly to purchase and take too much time to implement. This has been a challenge for organization both with regards to financial resources and human resources (Mukwasi & Seymour, 2015). However, this has changed as we now have software as a service (cloud) and Hosted ERP system which have quite shorter implementation time for cloud ERP systems (Al-Ghofaili, & Al-Mashari, 2014).

Apparently for logistic firms, ERP system hardly suits their business processes and they are needed to adjust their business process to accommodate the needs of the new systems or acquire new ERP system so as to match the organization. The risks associated with the business process are the possibility of failure to back cross-organization design, misalign business process and redesign business processes (Mukwasi & Seymour, 2015). With an aim of providing a solution to these challenges, vendors for instance SAP, Oracle, Microsoft amongst others have been offering scaled down and affordable onsite solutions and currently SAAS models. Because of the rapid technological development and competition compelling most organization opt for enhanced technologies, 3PL firms are now embracing SAAS because of advantages like real time data, standardization, information visibility and integrated processes. In addition, 3PLs are digitizing and

innovation is now a cornerstone in many of their business which is why they have confidence to invest in ERP systems (Seethamraju, 2015).

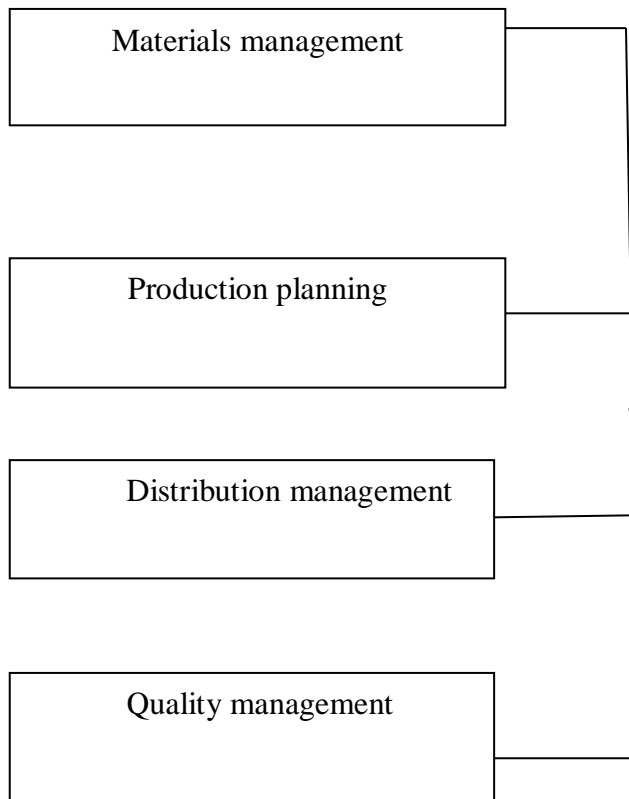
2.5 Conceptual Framework

This is a diagrammatic presentation that outlines key concepts and variables and the linkages between them. This research seeks to establish the effect of ERP systems adoption on performance.

Figure 2.1: The Conceptual Framework

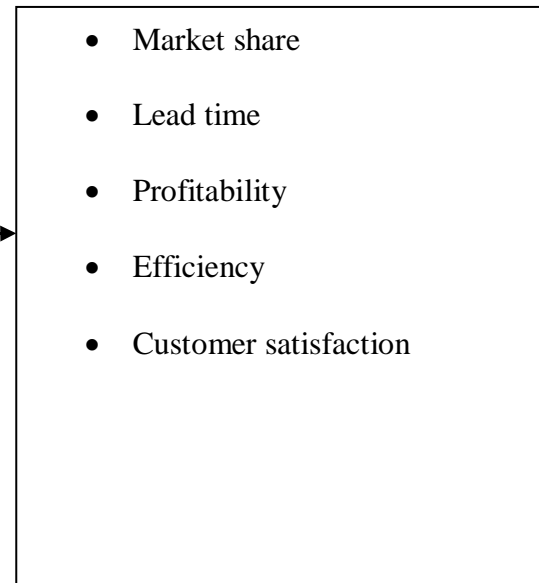
Independent Variables

ERP systems adoption



Dependent Variables

Firm performance



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

To ascertain the effect of ERP systems adoption on performance of 3PL service providers in Kenya, the research ought to have a research methodology that layout the procedure through which the research was performed. Combined in the chapter are four sections comprising research design, the procedure of collecting data, population of the study as well as lastly the data analysis technique.

3.2 Research Design

As per Khan (2008), research design is a technique that is systematically adopted by a researcher to allow them respond to the research question objectively, accurately, economically and validly. Both descriptive and causal research design were used for the study. The descriptive research intention is establishing the what and how of a condition. The suitability of this design is that it permitted the researcher to use quantitative data so as to ascertain the effect of ERP systems adoption on performance of 3PL service providers in Kenya. The researcher used the causal design to establish the cause and effect between ERP adoption and firm performance.

3.3 Population of the Study

Population is characterized as individuals, group or objects which the sample findings can be generalized (Cooper & Schindler, 2008). This research study population was conducted on all 3PL service providers in Kenya. According to KNBS (2019), there are 43 registered 3PL service providers in Kenya and a census was carried out since the number of firms is relatively small.

3.4 Data Collection

Primary data was utilized in the research. A total of 43 questionnaires were issued to operation managers of the respective firms. According to Burns and Burns (2008), questionnaires are ideal for collecting specific research information pertaining a population and can cover a wide number of subjects who are able to read and write. Physical and google forms were employed in administering the questionnaires to the selected respondents. The researcher ensured that each respondent is supplied with the same set of questionnaires in exactly the same way for feedback. Section A of the questionnaire contained information on the background of the respondents. Section B contained information on the extent of ERP system adoption, Section C contained information on firm performance among the 3PL service providers in Kenya and section D comprised information on the problems faced by 3PL service providers in Kenya in ERP system adoption.

3.5 Data Analysis

The primary data collected by the questionnaire was checked, edited as well as coded. For background information, objective I and III, descriptive statistics were conducted while objective II was achieved by conducting correlation and regression analysis. Multiple linear regression model was applied. This enabled establish if there exists an association of the dependent variable with either one or more of the independent variables.

The regression model below was used:

$$FP = \beta_0 + \beta_1 MM + \beta_2 PP + \beta_3 DM + \beta_4 QM + \varepsilon$$

where: FP = Firm performance

β_0 = regression equation interception

$\beta_1, \beta_2, \beta_3, \beta_4$ =being regression slope

MM =Material Management, PP = Production Planning, DM = Distribution Management, QM =Quality Management, ε =error term

CHAPTER FOUR: PRESENTATION AND ANALYSIS OF RESEARCH FINDINGS

4.1 Introduction

The study's findings are presented in this section. The general information section, which includes the response rate and demographic data, is one of the sections in this chapter. The descriptive as well as inference statistics are also discussed in line with the research objectives in this chapter.

4.2 Response Rate

The responses received divided by the number of target participants is the rate of response in survey research. The completion rate or return rate is another term for the response rate, which is commonly given as a percentage. Table 4.1 contains information on the response rate for this study.

Table 4.1: Response Rate

Response Rate	Frequency	Percent
Returned	36	83.7
Unreturned	7	16.3
Total	43	100

Primary Data (2021)

Depicted in Table 4.1 are 43 questionnaires allotted to operation managers in each of the 43 3PL service providers in Kenya. According to the data, only 36 of the 43 questionnaires sent to the target respondents received satisfactory responses and were returned, resulting in an overall research response rate of 83.7 percent. This agrees with Neil (2009), who indicated that a research with a rate of response of 70% or higher is appropriate for analysis as well as drawing conclusions.

4.3 General Information

This segment presents the findings on the descriptive statistics for the demographic outlines of all the participants and the firm's background information.

4.3.1 Gender

Gender specification was a requirement to the target population. Outcomes demonstrate that male participants' percentage was 55.6% whereas females were 44.4%. The fact that there is no substantial variance in the number of male as well as female employees among the target participants shows that the 3PL service providers value gender diversity. Table 4.2 summarizes the findings.

Table 4.2: Gender

Gender	Frequency	Percentage
Male	20	55.6%
Female	16	44.4%
Total	36	100%

Primary Data (2021)

4.3.2 Age

The investigator too had interest in establishing the respondent's age. Table 4.3 gives an illustration of the results. Results illustrate that the most participants (44.5%) were between 30-39 years old, 22.2% aged between 40-49 years and the same case applies to 50 and above age bracket while the least percentage (11.1%) were below 30. The outcomes suggest that of 3PL service providers' workers are youngsters.

Table 4.3: Age of the Respondents

Age	Frequency	Percentage
Below 30	4	11.1%
30-39	16	44.5%
40-49	8	22.2%
50 and Above	8	22.2%
Total	36	100%

Primary Data (2021)

4.3.3 Qualification

The responders were urged to state their highest level of education. The outcomes are summarized in Table 4.4. The majority (66.7 percent) were postgraduates, while 33.3 percent had bachelor's degrees, according to the findings. All of the people who responded had at least a bachelor's degree. As a result of the findings, 3PL service companies are eager to hire educated employees. In most cases, a high level of education is linked to competency and mastery of the skills required to accomplish one's work duties.

Table 4.4: Highest Level of Education

Education	Frequency	Percentage
Bachelor Degree	24	66.7%
Postgraduate	12	33.3%
Total	36	100%

Primary Data (2021)

4.3.4 Years with the Firm

Employees had worked for their current company for a variety of years. The amount of time spent with a company can be used to determine how well they know internal processes, capabilities, or effectiveness. The results indicated that 41.7% had stayed in

their current rank for 11-15 years, 36.1% for 6-10 years, 11.1% for 5 and below years and 11.1% for 16-20 years.

Table 4.5: Years with the Firm

Years	Frequency	Percentage
5 and below	4	11.1%
6-10 years	13	36.1%
11-15 years	15	41.7
16-20 years	4	11.1%
Total	36	100%

Primary Data (2021)

4.3.5 Age of the Firm

The researcher pursued to find how old the firms were. Although the concept of 3PL service providers has just gained popularity in the recent past. Most of the firms had been in operation for a period exceeding five years. 44.5% had been in business for between 16 and 20 years, 22.2% for above 20 years and a similar percentage for those aged between 11-15 years. 11.1% were aged between 5 and 10 years. The outcomes are depicted in Table 4.6

Table 4.6: Age of the Firm

Firm age	Frequency	Percentage
5-10	4	11.1
11-15	8	22.2
16-20	16	44.5
Above 20	8	22.2
Total	36	100%

Primary Data (2021)

4.3.6 Number of Employees in The Firm

The results in Table 4.7 below showed that 44.4% of the firms had 36 – 50 employees, 33.3% of the firms had 21 – 35 employees, 13.9% of the firms had 11 – 20 employees

while 8.4% of the firms had 5 – 10 employees. This implies that most 3PL service providers were big firms because of the high number of employees in the firms.

Table 4.7: Number of Employees in the Firm

Number of employees	Frequency	Percentage
5 – 10 employees	3	8.4
11 – 20 employees	5	13.9
21 – 35 employees	12	33.3
36 – 50 employees	16	44.4
	36	100

Primary Data (2021)

4.3.7 Ownership of the Firm

The goal of the study was to determine the firms' ownership status. Table 4.8 outcomes revealed 30.6% of the firms were domestically owned, 25% were foreign owned while 44.4% were both domestic and foreign owned. This means that the ownership of 3PL firms in Kenya is diversified. This is significant in the study as it helps in acquiring views from different perspectives. Table 4.8 summarizes the findings.

Table 4.8: Firm Ownership

Ownership	Frequency	Percentage
Domestic	11	30.6
Foreign	9	25
Both domestic & foreign	16	44.4
Total	36	100

Primary Data (2021)

4.4 Descriptive Statistics

The descriptive conclusions for every variable under investigation are reported in percentages, means, as well as standard deviations in this part.

4.4.1 Materials Management

Table 4.9 shows the mean as well as standard deviation for the specific features of material control. The findings show that 3PL companies have embraced materials management to a large extent. The reality that the mean scores for qualities linked to materials management were more than 3 on a five-point Likert scale supports this. The mean score for adopting inbound logistics capabilities was 4.3, with a 0.5 standard deviation, indicating that the majority of participants concurred that this type of materials management had been applied.

The mean score for having implemented out bound logistics capabilities was 4.2 and a standard deviation of 0.8 which represents agree. The mean score for having well managed inventory being 4.1 as well as a 0.6 standard deviation. Additionally, the mean for having enhanced raw materials quality check was 3.6 as well as a 0.8 standard deviation implying that indeed the 3PL firms have enhanced raw materials quality check.

Table 4.9: Descriptive Statistics for Materials Management

Statement	N	Mean	Std. Dev
In bound logistics capabilities have been implemented	36	4.3	0.5
Out bound logistics capabilities have been implemented	36	4.2	0.8
Inventory is well managed	36	4.1	0.6
Raw materials quality check has been enhanced	36	3.6	0.8
Average		4.1	0.7

Primary Data (2021)

4.4.2 Production Planning

Table 4.10 shows the mean as well as standard deviation for production planning the specific features. The findings show that 3PL companies engage in extensive production

planning. The reality that the mean scores for qualities relevant to production planning were above 3 on a five-point likert scale supports this. The mean for the assertion that production planning budgetary allocation has been automated was 4.2, with a 0.7 standard deviation, indicating that it has been automated to a significant degree. The average score for the claim that 3PL firms have automated shift allotment details was 3.7, with a 0.9 standard deviation. To a large extent, this entails.

The mean for assertion 3PL firms have master production schedule automated being 4.0 as well as 0.7 standard deviation. Moreover, the mean for assertion 3PL firms have their capacity planning automated were 4.4 as well as a 0.4 standard deviation. The assertion ERP system has automated capacity planning had the highest mean implying the greatest extent among the aspects of production planning.

Table 4.10: Descriptive Statistics for Production Planning

Statement	N	Mean	Std. Dev
Production planning budgetary allocation has been automated	36	4.2	0.7
Shift allotment details have been automated	36	3.7	0.9
Master production schedule has been automated	36	4.0	0.7
Capacity planning has been automated	36	4.4	0.5
Average		4.1	0.7

Primary Data (2021)

4.4.3 Distribution Management

The specific attributes mean as well as standard deviation of distribution management are as obtainable in Table 4.11. Conclusions demonstrate that distribution management is being utilized by the 3PL firms to a great level. The reality that the mean scores for

qualities linked to distribution management were above 3 on a five-point likert scale supports this. The mean for assertion 3PL delivery of orders is automated was 4.2 and a 0.6 standard deviation. Meaning delivery of orders is automated to a great extent among 3PL firms in Kenya.

The mean for assertion 3PL firms have automated order tracking being 4.2 as well as 0.7 standard deviation suggesting great degree. The mean for assertion that 3PL have their purchasing order automated being 4.0 as well as a 0.7 standard deviation. Averagely, the participants agreed 3PL firms ERP system have reverse logistic automated to a great magnitude as depicted by a 3.5 mean as well as 0.9 standard deviation.

Table 4.11: Descriptive Statistics for Distribution Management

Statement	N	Mean	Std. Dev
Delivery of orders has been automated	36	4.2	0.6
Order tracking has been automated	36	4.2	0.7
Purchase order has been automated	36	4.0	0.7
Reverse logistics has been automated	36	3.5	0.9
Average		4.0	0.7
Primary Data (2021)			

4.4.4 Quality Management

The mean as well as standard deviation for quality management specific attributes are as outlined in Table 4.12. The findings show that 3PL companies have embraced quality management to a significant degree. This is reinforced by the reality that the mean scores for quality management attributes on a five-point Likert scale were above 3. The mean for assertion that 3PL firms ERP systems have ensured information quality management is automated being 4.0 as well as 0.5 standard deviation suggesting that certainly

information quality management has been automated to a significant degree. The mean for the statement that 3PL firms ERP systems have ensured system quality visibility automation being 4.2 as well as a 0.6 standard deviation indicating certainly system quality visibility has been automated.

The mean score for raw material quality checks automation being 3.8 as well as 0.7 standard deviation implying that ERP systems have among 3PL service providers have ensured material quality checks automation. Further, the means score for the statement that inventory inspections have been automated was 3.9 as well as 0.8 standard deviation. This implies that 3PL firms have automated inventory inspections to a great extent.

Table 4.12: Descriptive Statistics for Quality Management

Statement	N	Mean	Std. Dev
Information quality management has been automated	36	4.0	0.5
System quality visibility has been automated	36	4.2	0.6
Raw material quality checks have been automated	36	3.8	0.7
Inventory inspections have been automated	36	3.9	0.8
Average		4.0	0.7

Primary Data (2021)

4.4.5 Firm Performance

The specific attributes mean as well as standard deviation of 3PL firms’ performance are as outlined in Table 4.13. Outcomes demonstrate that 3PL firms’ performance significantly had improved. This is explained by the reality that the mean for 3PL firms recording improved profitability was 3.9 as well as a 0.6 standard deviation. Implying that profitability of 3PL firms have increased significantly. Customer satisfaction mean was 3.6 as well as a 0.7 standard deviation. The respondents also agreed that lead time of

the 3PL firms have improved significantly as depicted by a 3.8 mean as well as a 0.6 standard deviation.

Improved 3PL firms' market share was too demonstrated by the 3.9 mean score as well as 0.8 standard deviations. The mean score for improved efficiency was 3.7 and a 0.7 standard deviation implying that indeed efficiency had gone up to a great extent. The statements that profitability and market share had improved had the highest mean. This means that of all the measures of performance adopted for this study, the profitability and market share have been achieved to the greatest extent. The statement that there is improved efficiency had the least mean at 3.7. This implies that although efficiency had improved, it had the least improvement of all the measures of performance adopted.

Table 4.13: Descriptive Statistics for Firm Performance

Statement	N	Mean	Std. Dev.
Profitability	36	3.9	0.6
Customer satisfaction	36	3.6	0.7
Lead time	36	3.8	0.6
Market share	36	3.9	0.8
Efficiency	36	3.7	0.7
Average		3.8	0.7

Primary Data (2021)

4.5 Inferential Statistics

This part comprises the inferential statistics for all of the variables. Pearson correlations as well as multiple regressions were used as inferential statistics. To establish the association between all the variables, Pearson correlation was utilized whereas regression was done to establish the association between ERP system (materials management,

production planning, distribution management and quality management) and 3PL firms' performance.

4.5.1 Correlation Analysis

The correlation analysis assisted in signifying the association between the dependent and independent variables. This involved the r coefficient as well as whether the association is positive or negative. This is as exemplified in Table 4.14.

Table 4.14: Correlation Results

		Performance	MM	PP	DM	QM
Performance	Pearson Correlation	1				
	Sig. (2-tailed)					
MM	Pearson Correlation	.534**	1			
	Sig. (2-tailed)	.000				
PP	Pearson Correlation	.425**	.536**	1		
	Sig. (2-tailed)	.004	.000			
DM	Pearson Correlation	.359*	.236	.066	1	
	Sig. (2-tailed)	.015	.119	.667		
QM	Pearson Correlation	.576**	.374*	.296*	.364*	1
	Sig. (2-tailed)	.000	.011	.048	.014	

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

* . Correlation is significant at the 0.05 level (2-tailed).

c. Listwise N=36

Primary Data (2021)

The correlation outcomes demonstrate a strong, positive as well as significant association between materials management and 3PL firms' performance as reflected by a 0.534 Pearson correlation coefficient as well as a 0.000 P-value. This is an indicator that more materials management translates to better firm performance. Results of correlation too establish a moderate, positive as well as substantial association between production planning and 3PL firms' performance as depicted by a 0.425 Pearson correlation coefficient and a 0.004 P-value. This is a sign that greater production planning leads to higher performance from 3PL companies.

Moreover, the results of correlation demonstrate a weak, positive as well as substantial association between distribution management and 3PL companies' performance as depicted by a 0.359 Pearson correlation coefficient as well as a 0.015 P-value. This is a gauge that increase in the level of distribution management translates to improved 3PL firms' performance. Eventually, the outcomes of correlation revealed the existence of a strong, positive as well as substantial correlation between quality management and 3PL firms' performance as evidenced by a 0.576 Pearson correlation and a 0.000 P value. This is an indicator that rise in the magnitude of distribution management translates to improved 3PL firms' performance.

4.5.2 Regression Analysis

The regression analysis incorporates the model fitness, the Analysis of Variance (ANOVA) as well as the regression coefficients. This is as verified in underneath.

Table 4.15: Model Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649 ^a	.421	.346	.399464

a. Predictors: (Constant), Quality management, Production planning, Distribution management, Material management

Primary Data (2021)

Materials management, production planning, distribution management and quality management were considered satisfactory in explaining 3PL firms' performance as presented in Table 4.15. This is as reflected by an R square of 0.421. This thus implies that materials management, production planning, distribution management and quality management account for 42.1% in 3PL firms' performance variations with factors beyond the research explaining the difference. The other inference is that the model

linking the variables relationships is satisfactory. The 0.649 R value implies presence of a strong relationship between the predictor variables (materials management, production planning, distribution management and quality management) and performance of 3PL firms.

Table 4.16: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.596	4	.899	5.633	.002 ^b
	Residual	4.947	31	.160		
	Total	8.542	35			

a. Dependent Variable: Firm performance
b. Predictors: (Constant), Quality management, Production planning, Distribution management, Material management

Primary Data (2021)

Table 4.16 outcomes confirm the model appropriateness and this is depicted by 5.633 F statistic as well as 0.002 p value. This shows that materials management, production planning, distribution management and quality management are good predictors of 3PL firms' performance. The regression analysis helped to demonstrate the magnitude of influence materials management, production planning, distribution management and quality management have on 3PL firms' performance.

Table 4.17: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.266	.382		3.357	.000
	MM	.274	.075	.330	3.646	.000
	PP	.179	.075	.204	2.376	.019
	DM	.252	.116	.178	2.181	.031
	QM	.199	.085	.192	2.346	.021

a. Dependent Variable: Performance

Conclusions depicted a positive significant correlation between materials management and 3PL firms' performance (β 0.274, P 0.000). This displays rise in materials management by a one unit might yield an enhancement on 3PL firms' performance by 0.274 units. Conclusions also portrayed a positive significant correlation between production planning and 3PL firms' performance (β 0.179, P 0.019). This point out that increase in production planning by one unit would cause an improvement on 3PL firms' performance by 0.179 units. Moreover, outcomes demonstrated a positive significant correlation between distribution management and 3PL firms' performance (β 0.252, P 0.031). This illustrates increase in distribution management magnitude by a unit might yield 0.252 units improvement on 3PL firms' performance. Finally, conclusions demonstrated a positive substantial correlation between quality management and 3PL firms' performance (β 0.199, P 0.021). This illustrates increase in distribution management magnitude by one unit might yield 0.199 units improvement on 3PL firms' performance.

The following is the regression model that resulted:

$$Y = 0.266 + 0.274X_1 + 0.179X_2 + 0.252X_3 + 0.199X_4 + \epsilon$$

Where

Y = Firm performance,

X₁ – Materials management,

X₂ – Production planning,

X₃ – Distribution management,

X₄ – Quality management

4.6 Challenges Facing Adoption of ERP System

The mean and standard deviation for the specific challenges facing ERP system adoption are as Table 4.18 displays. Conclusions reveal 3PL service providers are facing these challenges to a significant level. The reality that the mean scores for all of the listed challenges were greater than 3 on a five-point Likert scale supports this.

The respondents agreed that they are facing financial constraints, IT capability constraint, top management support absence and misfit of the business process and the ERP System logic. Further, the respondents also agreed that they are facing the challenge of poor coordination and communication, resistance to change, inadequate resources for user training, failure to support cross organization design and inability of the system to fulfill user's expectation. The greatest challenge was inadequate resources for user training while the least challenge was lack of top management support.

Table 4.18: Descriptive Statistics for Challenges Facing ERP Adoption

Statement	N	Mean	Std. Dev
Financial constraints	36	3.95	0.93
IT capability constraint	36	3.86	1.15
Absence of top management support	36	3.24	1.32
Misfit of the business process and the ERP System logic.	36	4.04	1.00
Poor coordination and communication	36	3.75	1.08
Resistance to change	36	3.52	1.29
Inadequate resources for user training	36	4.24	0.55
Failure to support cross organization design	36	4.21	0.73
Inability of the system to fulfill user's expectation	36	4.03	0.63
Average		3.87	0.96

Primary Data (2021)

4.7 Discussion of Findings

This research sought to determine the degree of ERP system adoption among 3PL service providers in Kenya and to determine the influence of ERP system adoption on performance among these firms. Further, the study also sought to establish challenges facing 3PL firms in adopting ERP systems. ERP system adoption was broken down into materials management, production planning, distribution management and quality management while performance was operationalized in terms of profitability, market share, efficiency, customer satisfaction and lead time. The findings indicate that ERP system has been adopted by 3PL service providers to a great extent and that this has significantly enhanced performance among these firms.

The research conclusions correspond with those of Wanyoike (2017) who studied the ERP system impacts on performance of Kenyan engineering consultancy companies. A descriptive research design was utilized and the research population was made up of all workers in engineering consultancy firms where a sample of 41 worked were selected for the research. Data analysis was attained via inferential as well as descriptive statistics. The study revealed that ERP systems positively affected the firms' performance. The study in addition showed that participants believed that ERP systems had a positive result on nearly all of the performance aspects like ROI, profitability of the firms, market share, operational costs and competitive edge.

The conclusions are also supported by Parto and Sofian (2016) who investigated the effects of ERP on performance in a developing nation case of Iranian manufacturing firms. The data utilized in this research was gathered using questionnaires in Iranian

manufacturing companies that had embraced ERP system. Seventy-nine companies were identified and a questionnaire survey that applied both postal mail and email were used. Structural equation model was utilized to assess the hypotheses using the multivariate statistical method Partial Least Squares. The finding revealed that the adoption of each ERP system module influences separately the performance pointers.

This was also supported by Mjomba and Kavale (2015) who studied effects of ERP on the performance of the Kenya power and lighting company. The researchers used descriptive research design as well as a 125 participants sample size. They collected the data using questionnaires which the researcher developed and administered using research assistant and then evaluated through SPSS software and the outcomes of the research presented in frequencies using figures and tables using ANOVA. The research showed that the organizations experienced management efficiency, lowered operation costs, increased profitability, and competitive advantage. All the factors had immense impact on the performance of the organization.

In regards to challenges facing ERP system adoption, the study revealed that 3PL firms are facing financial constraints, IT capability constraint, top management support absence and misfit of the business process and the ERP System logic. Further, the respondents also agreed that they are facing the challenge of poor coordination and communication, resistance to change, inadequate resources for user training, failure to support cross organization design and inability of the system to fulfill user's expectation. This is in line with Mukwasi and Seymour (2015) who described these challenges to include scarce organizational fitness, absence of skills, absence of proper user training and involvement, inadequate software design, lack of enough management skills and strategy.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Presented in this chapter is the summary, conclusion, as well as recommendations. The study's summary, conclusion, and suggestions for improvement are all presented in accordance with the study's research objectives. Recommendations for further research and limitations of the study are also offered in this chapter.

5.2 Summary of Findings

The research's main objective was to determine ERP system adoption influence on 3PL firms in Kenya performance. The research was anchored on technology acceptance model, resource-based view theory and diffusion of innovation theory. Firm performance was the dependent variable that was represented by profitability, market share, lead time, customer satisfaction and efficiency operationalized using likert scale questions. The independent variables were materials management, production planning, distribution management and quality management. Descriptive survey design was adopted in the research. All 43 3PL firms in Kenya were included in the target population.

The census approach was used since the population was tiny. A structured questionnaire was presented to 43 operation managers of 3PL firms in Kenya via both the drop and pick later approach as well as emails to obtain primary data. 36 questionnaires were collected as a result of the researcher's follow-up, yielding a response rate of 83.3 percent. Descriptive statistics, correlation, and regression analysis were utilized to analyze the data. The perceived significance of each independent variable in impacting business performance was determined using a multivariate linear regression model as well as the t-statistic.

The research's first objective was assessing the extent of ERP adoption among 3PL service providers in Kenya. The findings show that 3PL companies have embraced materials management to a large extent. The fact that the mean scores for qualities linked to materials management were more than 3 on a five-point likert scale supports this. The conclusion of descriptive analysis too discovered most 3PL firms in Kenya had adopted production planning to a great extent. Further, it was established that 3PL service providers have adopted distribution management and quality management to a great extent.

The research's second objective was determining influence of ERP systems adoption on performance of Kenya's 3PL firms. The conclusions discovered significant positive association between materials management and firm performance. The results moreover recognized production planning rise might result to a rise in firm performance. The regression findings also revealed that distribution management and firm performance had a positive and substantial link. Lastly, the regression outcomes established a positive as well as significant correlation between quality management and firm performance.

The research's third objective was to establish challenges facing 3PL service providers in adopting ERP systems. The study revealed that that they are facing financial constraints, IT capability constraint, absence of top management support and misfit of the business process and the ERP System logic. Further, the respondents also agreed that they are facing the challenge of poor coordination and communication, resistance to change, inadequate resources for user training, failure to support cross organization design and inability of the system to fulfill user's expectation. The greatest challenge was inadequate resources for user training while the least challenge was lack of top management support.

5.3 Conclusions

For each of the research objectives, this segment summarizes the conclusions taken from the research results. The study concluded that ERP systems have been adopted to a great level by Kenyan 3PL service providers. This is reinforced by the reality that in a 5 point likert scale, all the four selected measures of ERP system adoption had means greater than three. Materials management, production planning, distribution management and quality management have all been adopted to a significant level.

The research resolved that materials management influenced 3PL firms' performance positively. This was reflected by the regression as well as correlation outcomes backing conclusions as there was a positive and significant correlation between materials management and 3PL firms' performance. According to the findings, production planning had a positive impact on the performance of 3PL firms. This was reflected by the regression as well as correlation outcomes back the conclusions due to presence of a positive and significant correlation between production planning and performance of 3PL firms.

The study also concluded that distribution management influenced 3PL firms' performance positively. This was reflected by the regression as well as correlation outcomes back the conclusions as there was a positive as well as significant correlation between distribution management and 3PL firms' performance. The research found that quality management has a positive impact on the performance of 3PL firms. This was reflected by the regression as well as correlation outcomes back conclusions as there existed a positive and significant correlations between quality management and performance of 3PL firms.

The study also concludes that 3PL service providers in Kenya are facing financial constraints, IT capability constraint, absence of top management support and misfit of the business process and the ERP System logic. Further, the firms are also facing the challenges of poor coordination and communication, resistance to change, inadequate resources for user training, failure to support cross organization design and inability of the system to fulfill user's expectation. The greatest challenge was inadequate resources for user training while the least challenge was lack of top management support.

5.4 Recommendations for Policy and Practice

The research revealed that materials management influenced 3PL firms' performance positively. According to the findings, 3PL management should develop and execute necessary materials management systems to maintain intended firm performance while avoiding excessive competition. Correspondingly, the research suggests that providers of ERP systems should ensure that the systems are well equipped with features that will enable efficient materials management.

The study revealed that production planning influenced 3PL firms' performance positively. As a result, the study suggests that enterprises who have not yet embraced the ERP system's production planning feature should implement internal organizational strategies to stimulate production planning adoption. These firms can use production planning as a competitive tool to gain technological efficiencies in production process integration, monitoring, as well as enforcement, cut transaction costs, and boost market power, all of which will improve the firm's performance.

According to the findings, distribution management had a positive impact on the performance of 3PL firms. As a result, the research suggested managers and shareholders of companies that have yet to implement distribution management capabilities in ERP systems to do so in order to remain competitive and profitable in this challenging business environ. These firms can adopt ERP systems to take advantage of the distribution management features available and by so doing enhance their performance.

The study revealed that quality management influenced 3PL firms' performance positively. The research thus suggested in order to improve firm performance, 3PL firms can adopt ERP systems to take advantage of the quality management features available. The net adoption impact is positive growth in performance which will aid in maximization of shareholders' wealth.

5.5 Limitations of the Study

To begin with, this research depended on primary data acquired via a questionnaire; however, few target participants did not complete the surveys. Others filled in some selections but left out others, reducing the results' reliability. The investigator had to follow up on email as well as phone calls on a regular basis. Furthermore, some participants were concerned about their privacy when answering the questions. The researcher assured them, though, that the information would only be utilized for scholarly purposes.

The focus was on some of the characteristics that are thought to influence success among Kenyan 3PL enterprises. The research centered on four explanatory variables in particular. Nevertheless, there are additional factors that are expected to influence the

performance of these firms. Others are external, like exchange rates, inflation, as well as political interference, whereas some are internal, like technology adoption, process improvements, as well as outsourcing.

A multiple linear regression model was employed to finish the data analysis. It would be difficult for the researcher to generalize findings with precision due to the restrictions associated with utilizing the model, like erroneous as well as misleading conclusions arising from a change in a variable like performance. If new data is added to the regression model, the model may not perform as well as before.

5.6 Suggestions for Further Research

The findings of this research revealed that materials management, production planning, distribution management and quality management, accounted for 42.1% of the variation in the 3PL firms' performance. Future research should focus on determining other characteristics that account for the remaining 57.9%, according to the findings. Subsequent research could focus on a comparison of organizations that have implemented ERP systems vs those who have not, in order to clearly show the differences in performance.

This research focus was on ERP systems adoption effect on performance among Kenyan third party logistic service providers. As a result, for comparative purposes, comparable research can be conducted across enterprises in various sectors such as manufacturing, tourism, insurance, banking, investment, commercial, as well as service firms, among others.

Lastly, this research relied on a multiple linear regression model, that has its own set of drawbacks, such as errors as well as misleading outcomes when a variable is changed. Future study would concentrate on models such as the Vector Error Correction Model (VECM) in order to better understand the numerous relationships between ERP system adoption and performance.

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APPENDICES

Appendix I: Research Questionnaire

Instructions

The following questionnaire has been designed to gather ERP systems adoption data and performance of third-party logistic service providers in Kenya. You are consequently invited to kindly respond to the following questions to the best of your knowledge and understanding. The research conclusions will only be utilized for academic purpose.

Instructions

1. Kindly, make sure that you tick in the space provided
2. Also, provide additional comments where necessary

SECTION A: BACKGROUND INFORMATION

1. Please indicate your gender:
Male () Female ()

2. Please indicate your age in years:
Below 30 () 30 – 39 () 40– 49 () 50 and above ()

3. Please indicate your highest education level:
Certificate () Diploma () Bachelor Degree () Postgraduate ()
Other, please specify

4. Please provide your job title within the firm

.....

5. Please indicate your working experience with this firm in years: -
5 and below () 6 – 10 () 11 – 15 ()
16 – 20 () 21 – 25 () 26 – 30 () 31 and above ()

6. How old is the firm?

Below 5 years [] 5 – 10 years [] 11 – 15 years [] 16 – 20 years []

Above 20 years []

7. Which year was the firm registered?

8. In which year did the firm start operating?.....

9. How many employees do you have in your firm?

Less than 5 [] 5 – 10 employees [] 11 – 20 employees []

21–35 employees [] 36 – 50 employees []

10. Ownership of the firm? Domestic [] Foreign[] Both Domestic and Foreign []

SECTION B: ERP SYSTEMS ADOPTION

9. On a scale of 1 to 5, specify the magnitude to which the firm has adopted the ERP system

Use the following scale:

- 1) No extent, 2) Little Extent, 3) Moderate extent, 4) Large extent, 5) Very large extent**

ERP System Adoption	SCALE				
	1	2	3	4	5
Material Management					
In bound logistics capabilities have been implemented					
Out bound logistics capabilities have been implemented					
Inventory purchasing has been automated					
Raw materials quality checks have been automated					
Production Planning					
Production planning budgetary allocation has been automated					
Shift allotment details have been automated					
Master production schedule has been automated					

Capacity planning has been automated					
Distribution Management					
Delivery of orders has been automated					
Order tracking has been automated					
Purchase order has been automated					
Reverse logistics has been automated					
Quality Management					
Information quality management has been automated					
System quality visibility has been automated					
Raw material quality checks have been automated					
Inventory inspections have been automated					

SECTION C: FIRM PERFORMANCE

7. On a scale of 1-5, specify the magnitude to which the firm has performed according to each performance measures below. Use the following scale:

- 1) No extent, 2) Little Extent, 3) Moderate extent, 4) Large extent, 5) Very large extent**

PERFORMANCE MEASURES	1	2	3	4	5
Market share					
Lead time					
Profitability					
Customer satisfaction					
Efficiency					

Firm's Market share

Year	2015	2016	2017	2018	2019
Market Share (%)					

SECTION D: CHALLENGES FACING ADOPTION OF ERP SYSTEM

On a scale of 1 to 5, specify the magnitude to which the firm has faced every challenge below due to adoption of ERP systems, where

- 1) No extent, 2) Little Extent, 3) Moderate extent, 4) Large extent, 5)Very large extent**

Statement	1	2	3	4	5
Financial constraints					
IT capability constraint					
Lack of top management support					
Misfit of the business process and the ERP System logic.					
Poor coordination and communication					
Resistance to change					
Inadequate resources for user training					
Failure to support cross organization design					
Inability of the system to fulfill user's expectation					
Others, Specify and rate accordingly					

THANK YOU VERY MUCH

Appendix II: Third Party Logistic Service Providers in Kenya

1. ACCELER GLOBAL LOGISTICS LIMITED
2. AFRI LOG LTD
3. AGILITY LOGISTICS LIMITED, KENYA.
4. AIRCOM CARGO LOGISTICS LTD
5. AMADEUS EAST AFRICA
6. ASSA ABLOY KENYA
7. BDP INTERNATIONAL
8. BOLLORÉ LOGISTICS KENYA
9. BOLT
10. DAMCO LOGISTICS (KENYA) LTD-NAIROBI
11. DHL EXEL SUPPLY CHAIN (K) LTD
12. DHL GLOBAL FORWARDING
13. DSV AIR AND SEA LIMITED
14. DW EXPRESS LTD
15. EFEX LOGISTICS AND COURIER SERVICES
16. ERNEST & YOUNG EDUCATION SUPPORT PROGRAMME
17. FOX INTERNATIONAL LOGISTICS LTD
18. GATES LOGISTICS
19. GLOBAL OUTSOURCING
20. IBM EAST AFRICA LTD
21. JADA EXPRESS
22. KOMAZA LTD
23. KUEHNE NAGEL LTD
24. M AND S LOGISTICS LIMITED
25. MARA MOJA
26. MITCHELL COTTS FREIGHT (AIR CARGO TERMINAL)
27. MONDO RIDE
28. NIELSEN KENYA LTD
29. PEWIN CABS
30. SAFMARINE KENYA LTD

31. SENDY LTD
32. SGS KENYA LIMITED
33. SHARDI SHIPPING & CARGO
34. SIEMENS KENYA
35. SIGINON GLOBAL LOGISTICS
36. SKYLAND LOGISTICS LTD
37. TIANSHI K TRADING & LOGISTICS CO LTD
38. UBER
39. UNITED PARCEL SERVICE JKIA
40. UPLIFT EXPRESS (KENYA) LTD
41. UPS
42. WISEWAY LOGISTICS LTD
43. WORLD CARGO LOGISTICS LTD

Source: KNBS (2019)