INTEGRATED MANAGEMENT INFORMATION SYSTEMS AND OPERATIONAL PERFORMANCE OF STATE OWNED ENTITIES IN THE MINISTRY OF FINANCE, KENYA

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DECLARATION

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

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I declare that the work presented in this research project report was carried out by the candidate under my supervision as the appointed university supervisor.

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DEDICATION

To my husband Mr. Z.O Aura, children Laura, Risa and Kimberly, family members your prayers and moral support have been a source of encouragement during the entire program. May the Almighty God bless and keep you in good health.

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TABLE OF CONTENTS

LIST OF TABLES

FIGURE

ABBREVIATIONS AND ACRONYMS

ERP	Enterprise Resource Planning
GoK	Government of Kenya
HRM	Human Resource Management
IFMIS	Integrated Financial Management Systems
ICT	Information and Communication Technology
KIPPRA	Kenya Institute of Public Policy, Research and Analysis
SPSS	Statistical Package of Social Sciences

ABSTRACT

Issues of deteriorating performance of State entities in developing countries and more specifically in Kenya has become an issue of concern from customer, management, policy makers and scholars thus pertinence of this study to establish the effect of integrated management information systems on operation performance of State entities in the ministry of finance in Kenya. The specific objectives of the study were to determine the effect of financial, procurement, marketing and human resource management information systems on operational performance. Resource based theory was the overall theory that informed this study and supported by technology acceptance theory, stakeholder theory and balanced scorecard model. The study adopted a cross-sectional research design. The target population of the study was 119 respondents from the 16 State entities in the ministry of fiancé in Kenya. Out of the total target population of 119 respondents, Israel formula was used to arrive at the ideal sample size of 83 respondents. The respondents of the study comprised of directors, deputy directors and managers of State entities in the ministry of finance in Kenya. Data was collected from respondents using structured questionnaires with closed ended questions. Secondary data was collected from benchmark reports, strategic plans and financial statements. Validity of the research instrument was tested using scholars at the University Nairobi and industry operation management experts while reliability was tested using Cronbach alpha values with a cut-off point of 0.7 as recommended in literature. The Statistical Package of Social Sciences was used in the quantitative analysis. Quantitative data was analyzed using Pearson Product Moment correlation method while qualitative data was analyzed using content analysis method. The analyzed data was presented in form of tables. The findings of the study revealed that there exists a positive significant relationship between Financial, procurement, marketing, human resource management information systems and operational performance. The study concluded that unless State entities strive to embrace integrated management information systems such as finance, procurement, marketing and human resource management systems, achieving operational performance in terms of quality services, cost minimization, customer satisfaction and change implementation would an uphill task. The study recommends that to overcome these challenges, top managers of the State entities should ensure that employees are equipped with technological skills and knowledge, allocate adequate budgets to implement new initiatives, create technological awareness among workers and form industry partnerships in order to enhance operation performance of State entities in Kenya.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In the world of competition, influence of technology and globalization, integrated management information systems (IMIS) are considered to be drivers of operational excellence in most of the organizations in developed and developing countries (Nyamweya 2017). Like any other competitive enterprises in the world, public entities in developing countries are embarking on integrated information systems in order to improve operation performance. Re-thinking on integrating specific technologies in systems to enhance service delivery (Nicolaou, Sratopoulos & Dehning, 2013).With heighted demand of quality services from State owned entities by various stakeholders such as suppliers, customers, employees and investors, achieving operational performance is conceptualized to be a function of integrated information systems

Enhancing stakeholder value, modern competitive organizations around the globe are re-thinking on how to be more efficient and effective using appropriate integrated management information systems to achieve organizational goals more efficiently and effectively (Ongeti, 2014). Even though technology integration in the system may be characterized by internal and external challenges, automation of systems has continued to remain the fundamental driver or enabler of minimizing costs and maximizing profits (Nicol, 2013). Integrated information systems are considered to contribute to stimulate operational performance of organizations in terms of quality service delivery, minimal costs of operation and increased profits (Kalleberg & Moody, 2014).

Theories adopted in the study to inform the study involves resource based theory proposed by Barney (1991) which argues that organizations can enhance operational

performance using tangible and intangible resources such as technology, technology acceptance model advanced by Davis (1989) which argues that technology is likely to be accepted if is user friendly, stakeholder theory established by Freeman (1984) which emphasize that stakeholder value is the ultimate goal of operational performance. Constructs of the theories are thought to inform key variables of the study thus deductive arguments on the problem under investigation thus discovery of new knowledge on the link between integrated information systems on operational performance of public entities.

In extension, Kalleberg and Moody (2014) assert that integrated information systems are thought to be associated to stakeholder values which involves instant service delivery and minimal complaints (Kakwezi & Nyeko, 2010). Based on the fact that there are limited studies conducted reveals conflicting views on the link between integrated information systems on operational performance and absence of a framework examine variables of this study, it is on this background this study adopted an expanded framework to uncover the research gaps in State owned entities. Further, based on the role played by public institutions in service delivery, this study will be of great value to various stakeholders including the government, general public, investors and other partners in the public service.

1.1.1 Integrated Management Information Systems

According to Tanwar (2013), an Integrated Management Information System (IMIS) is described as a set or a combination of systems which organizations can adopt to improve performance. On the other hand, Kalleberg and Moody, (2014) define Integrated Management Information System as a combination of technologies which firms adopt in order to achieve their goals in a more efficient manner. The selected Integrated

Management Information Systems (IMIS) which are thought to influence operational performance of State entities involves financial, procurement, marketing and human resource management information systems.

Kakwezi and Nyeko (2010) contend that financial management information systems are thought to be systems which seeks collect, analyse and interpret information for strategic financial decision making. Outputs of any effective financials management information system involves timely preparation of capital budgets, cash flow forecasts, working capital reports and accounting reports. Further, Nicol (2013) argue that procurement management information systems are thought to be technologies that seek to enhance procurement, logistics, and inventory and supply chain activities of firms. Ongeti (2014) posits that automation of procurements systems has not only contributed to enhanced customer service delivery but also contributed to reduced costs of operation by 50% in competitive enterprises in the developed and developing countries. Embracing of practices such as e-tendering, e-sourcing and e-invoicing can significantly promote operational efficiency and effectiveness in private and public entities.

Moreover, Nicolaou and Bhattacharya (2014) opine that marketing management information systems are thought to be systems or technologies that facilitate collection, analysis and interpretation of customer information concerning products and services in the market. Organizations with effective marketing management information systems are likely to attract and retain customers based on quality products and services (Nicolaou & Bhattacharya, 2014). Spathis and Constantinides (2014) argue that effective management of customer information is viewed to be one of the key factors that make organizations to recognize the need of customer satisfaction.

Spano and Bello (2010) contend that recognition of website management by top leadership, development customer database and creation of user-friendly interface between the company and stakeholders not only influence trust and confidence to the organization by customer but also contribute to sustainable mutual relations based on excellent service delivery (Nicolaou & Bhattacharya, 2014). Recognition of consumer research, decision support systems, intelligence and management of internal information would contribute to operational performance of organizations if effectively managed (Hunton et al., 2013).

Nicol (2013) opines that human resource management information systems are thought to be human resource solutions that are provided by organizations through web-enabled functions such as trainings, payroll, HR compliance and recruiting. HR systems in an organizations are viewed to be integrated database features that facilitate creation of reports and analysis of information for effective workforce management in the changing business environment. Similarly, Tanwar (2013); Tobie, Etoundi and Zoa (2016) acknowledge that with effective HR systems, organizations can be in apposition to allocate employee tasks based on their competencies, ability to manage a larger number of workers and manage employee payroll issues with minimal errors thus efficiency and effectiveness.

It is argued by Tolle (2016) and Hunton et al. (2013) that the fundamental objective of integrated management information systems in any competitive enterprise is thought to influence operational performance which can be measured using metrics of customer satisfaction, innovation and learning, process efficiency and effectiveness and profits generated, quality, speed, flexibility, cycle time, and waste reduction.

1.1.2 Operational Performance

Even though there is no common consensus on the definition of operational performance, a number of scholars such as Koske (2011); Nicolaou and Bhattacharya (2014); Nicol, (2013) describe it as the extent to which an organization can achieve efficiency, effectiveness, cycle time, waste reduction, productivity, regulatory compliance and environmental responsibility by effective management or alignment of its systems or resources which may be in form of raw materials, people and technology.

Further, Hunton, Lippincott and Reck (2013) argue that operational performance in competitive enterprises can be measured using metrics such as customer and employee satisfaction, revenue earned and profits generated. Similarly, Hunton, Lippincott and Reck (2013) opine that operations seek to achieve the objectives of quality, cost, timeliness/speed and flexibility. On the other hand, Kalleberg and Moody (2014) postulate that like any competitive entity, both private and public organizations are embarking on integrating systems with modern technologies in order to enhance operational performance.

The fundamental principles that guide operational performance philosophy in any competitive enterprises as recommended by Nicolaou et al. (2014) involves quality, which entails conforming or surpassing customer expectations, speed, which involves increasing value to the customer in terms of time taken to access the service or payment, dependability, which involves giving the customer the right product, at the right time and form, flexibility, which reflect that ability of the organization to change its products, way of delivering services and time of delivering services due to changing business trends and finally, the cost principle which entails the ability of the organization to

minimize costs using all means and ways and more especially by integrating technology in the systems.

1.1.3 State Owned Entities in the Ministry of Finance in Kenya

State owned entities are created by Acts of parliament which mandates them to perform specific duties on behalf the government to the general public. All State entities are regulated and controlled by the by the Act of parliament (Cap 446) Section 11 and 12. Based on their significant role in delivery of public services, State owned entities in Kenya are categorized into various groups. These organizations are often partially or fully funded by the government (KIPPRA, 2018). Despite the fact that State owned entities are providing services to the members of the public, it is observed that majority of them are inefficient and ineffective in their service delivery thus pertinence of this study to uncover the research gaps in this area. State entities focus on improving efficiency in the management and utilization of resources entrusted to them with a view to deliver services in a cost effective manner.

This study focused on 16 State owned entities in the Ministry of Finance as shown in Appendix (3) to establish the relationship of consolidated integrated management information systems and operational performance. Despite the effort of State entities in the Ministry of Finance in Kenya to offer service delivery, it is observed that more than 50% of the corporation are experiencing deteriorating performance. Customer dissatisfaction, inability of change implementation, management wrangles, misappropriation of money allocated to implement projects and lack of innovation are issues of concern which calls for multiple operational management strategies in order to enhance operational performance thus forming a basis for this study.

1.2 Research Problem

Despite the fact that integrated management information systems are thought to influence operational performance of organizations in terms of costs, quality, speed, dependability and flexibility, it is yet not understood clearly the link between integrated management information management systems on operational performance and more specifically in the State owned entities in the ministry of finance in Kenya (Nyamweya 2017; Koske, 2015 & Otieno, 2010). With increased technology, change of consumer demands, employee diversity and increased costs of operation, most of the organizations both in developed and developing countries are embarking on embracing integrated management information systems which are termed to be enterprise resource planning systems adopted to enhance operational performance of organizations.

According to Tolle (2016), State owned entities in Kenya and more specifically which are in the ministry of finance are experiencing quite a number of problems such as increased costs of operation, corporate governance issues, inconsistencies in service delivery associated with unfulfilled customer promises, inability of employees to use the newly introduced technologies and misappropriation of funds due to lack of appropriate systems of service delivery. Further, based on deteriorating performance of State owned entities in Kenya, it has been contemplated to privatize the corporation in order enhance their productivity (Juma & Kimencu, 2017).

Even though extensive empirical studies have been conducted internationally and locally, it is observed that there are conflicting views on the link between integrated information systems on operational performance of organizations in State owned entities in Kenya. Wanyoike (2017) examined the effect of Enterprise Resource Planning and performance of consultancy firms. The study adopted exploratory research design and

purposive sampling technique to select 156 respondents. Linear regression was adopted to analyse data and the findings revealed a positive correlation between ERP systems and performance of consultancy firms in Kenya.

In contrast, this study will seek to address this research gaps by seeking to examine the effectiveness of integrated information systems on operational performance of State owned entities in the Ministry of Finance in Kenya by using cross-sectional research design and stratified sampling to select respondents of the study. Further, descriptive statistics will be used to analyse due to the fact that the study will seek to assess the extent of adoption and impact of integrated information systems on operational performance of State owned entities in the Ministry of Finance in Kenya.

Koech (2014) examined the relationship between enterprise resources planning on performance of agro-processing firms in Kenya. The study used constructivist paradigm and a case study research design to select 345 employees of Kenya Tea Development Authority (KTDA). Multiple regression was used to analyse data. The results indicated there exist a difference between ERP practices on performance of KTD factories. However, this study sought to acknowledge these research gaps by seeking to adopt positivist paradigm which takes a quantitative approach in data analysis. Further, the study was confined to State owned entities in the Ministry of Finance and respondents were employees selected from various management levels.

Moreover, Munyiri (2014) established that ERP implementation in State owned entities and more specifically in the energy sector in Kenya experienced significant improvement in their performance in terms of costs incurred due to technology integration in the procurement process. The study further pointed out that, even though ERP implementation was attributed to enhanced service delivery, it was a challenging

task for State parastatals to embrace it due to lack of skills and necessary support from top level management. However, this research gaps were addressed by the current study seeking to establish the effectiveness of integrated information systems on operational performance of State owned entities in the Ministry of Finance in Kenya.

From the research work of Wanyoike (2017); Juma and Kimencu (2017); Nyamweya (2017); Koske (2015); Koech (2014); Munyiri (2014) and Otieno (2010), it was noted that the studied examined variables of this study partially and in isolation. Additionally, metrics of measuring constructs of the studies varied from context to context. Further, some studies were confined to different sectors such as energy and manufacturing. Moreover, some studies adopted constructivist paradigms which resulted to subjectivity of information due to mixed research design. The insufficient sample size and factor analysis method adopted contributed to inconclusive findings thus pertinence of this study to establish the effectiveness of integrated information management systems on operational performance of State owned entities in the ministry of finance in Kenya. The study is guided by the question: What is the effect of integrated information management systems and operational performance of State owned entities in the Ministry of finance, Kenya.

1.3 General Objective

To determine the effect of integrated management information systems and operational performance of state owned entities in Kenya.

1.3.1 Specific Research Objectives

The research objectives that guided the study were:

(i) To determine the extent of adoption of integrated management information systems in State owned entities in ministry of finance in Kenya.

(ii) To assess the impact of integrated management information systems on operational performance of State owned entities in ministry of finance in Kenya.

(iii) To establish challenges of integrated management information Systems in State owned entities in ministry of finance in Kenya.

1.4 Value of the Study

Information obtained may help managers of State owned entities of the ministry of finance in Kenya to make effective decisions on how integration of management information systems would be used to enhance customer service delivery. Management would realize the effectiveness of integrating information management systems as a way of enhancing efficiency and effectiveness. Employees of the State owned entities in the ministry of finance in Kenya would use the information to have an in-depth understanding of the role of technology in enhancing service delivery to customers. Employees would be the immediate beneficiaries as they would be equipped with appropriate technological skills to enhance overall organizational productivity.

Policy makers such as investors and related government agencies may use the information to develop guidelines which would promote operational performance of State owned entities in Kenya. Policies formulated would facilitate digitizing of internal processes to eliminate unnecessary wastage of time, money and stationery materials thus improved operational performance.

Scholars and researchers in the operation management may use this information to enrich their literature in operations management thus improvement of existing theories or development of new theories on integrated management information systems and operational performance. Further, the information may help researchers and scholars to

identify research gaps and seek to replicate similar studies in other sectors and countries to examine consistence of results.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents the theoretical review section which discusses theories which informs the study. Further, empirical review section describes studies conducted internationally and locally and highlights conceptual, contextual research gaps to be addressed by the current study.

2.2 Theoretical Foundation of the Study

The overarching theory which informed this study is resource based theory and supported by technology acceptance theory, stakeholder theory and balanced scorecard model.

2.2.1 Resource Based Theory

The theory was firm pioneered by Barney in 1991 explains that organizational competiveness is determined by that ability of the firm to align its resources with changing business environment. The theory views a firm as an entity with unique resources and capabilities that can be utilized to achieve stakeholder expectations (Barney, 1991). Capability is the firm's ability to ensure that the limited resource are utilized in a combined manner with an aim of achieving the desired end. (Kalleber & Moody, 2014). Similarly the theory postulate that sustainability of firms if a function of resources that cannot be duplicated or substituted by other industry players.

Hunton et al. (2013) opine that both tangible and intangible resources which range from new techniques and processes, time management information and financial resource can influence operational performance of firms if effectively managed Koech (2014) acknowledges that a frim can use it unique demographic characteristics such as the

history, age, ownership, human resources and physical facilities to gain competitive advantage. The theory underpinned the study on the premise that State owned entities in Kenya can utilize their tangible and intangible resources and capabilities such integrated information management technologies such as procurement, financial, marketing and human resource management can influence operational efficiency and effectiveness. Development of service delivery models that are customer oriented and technologically advanced would not only give the State owned entities a mileage in the public sector locally but also in the global sector.

2.2.2 Technology Acceptance Theory

The theory was established by Davis (1989). The theory is inclined on three perspectives which includes: perceived value and perceived usage which describes how customers may find it easier to use the newly introduced technology or system, attitude towards technology may indirectly influence individual level of education and exposure and behavioural intention which develops before or after using the system or technology (Nicolaou et al., 2013). Oberi (2016) argues that despite the fact that culture and other individual factors can hinder effective use of technology in any society, it is thought that the value of that technology can contribute to adoption and acceptance.

Alexander and Young (2011) postulate that organizations as organisms who always seek to survive, technology is conceptualized to be one of the fundamental drivers of operational efficiency. Subsequently, Abraham and Taylor (2013) contend that in the world of competition, change of consumer needs and wants, technology has become the lifeblood of global firms. Failure to embrace modern systems, organizations are likely to experience losses as a result of rigid traditional ways of doing things. The tendency of customers accepting or rejecting an innovation launched is high or low if the innovation

is perceived to be complex and difficult to be used (Bijuna, Mohan & Sequeira, 2016).

Sofian and Saat (2016) suggest that perceived use of the innovation or ICT practice by corporation customers will contribute to positive or negative performance of the State corporations. Adequate awareness and orientation of the general public on how to use ICT platforms introduced by the government will lead to enhanced efficiency and effectiveness. The theory was applicable in this study on the notion that State entities in the Ministry of Finance in Kenya are likely to enhance operational efficiency in terms of costs, quality, flexibility, dependability and waste reduction if they integrate appropriate technologies in service delivery ranging from finance, procurement, marketing and human resource.

2.2.3 Stakeholder Theory

The theory was pioneered by Ludwig Von Bertalanffy (1968). It advocates that system thinking is dependent on stakeholder value. With emergence of modern technologies and environmental complexity, systems have to re-think on how to enhance stakeholder value by integrating appropriate technologies in the systems to create and maximize wealth (Shahzadi & Naveed, 2016). Since organizations are integral part of the society, stakeholders such as customers, shareholders, creditors, employees, suppliers, retirees, community, government and competitors should be given the maximum attention for an organization to enhance operation performance.

Social corporate responsibility of the firm goes beyond the profit objective for any entity that seeks to survive in the changing business environment (Singh & Singh, 2013). Spano and Bello (2010) postulate that public entities should not only embrace integrated management information systems to enhance operational performance but also should re-think on how to enhance service delivery through business process re-

engineering, product innovation, continuous improvement and consumer research. The central tenets of the theory emphasize that public entities should involve internal and external stakeholders in any decisions made in order to enhance operational efficiency.

Transparency and accountability of systems not only enhances stakeholder confidence and trust bust also contributes directly and indirectly on overall organizational productivity (Tanwar, 2013). The theory was applicable in this study on the assumption that State owned entities in Kenya would only create and maximize stakeholder value if they embrace integrated management information systems. With changing stakeholder needs and increased demand of service quality, adoption of appropriate technologies in the systems would result to minimal costs of operation, improved service quality, enhanced flexibility and waste reduction.

2.3 Integrated Management Information Systems and Operational performance

Extant literature on integrated management information systems in relation to operational performance of organizations noted a positive link between integrated management information management systems and firm performance though not in the public sector (Parto, Sofian, & Saat, 2016). Shahzadi and Naveed (2016) revealed that there exist a difference between ERP training on organizational employee performance. The study pointed out that employee training of ERP technologies was not directly correlated to employee performance.

Even though organizations were determined to adopt various technologies such as electronic procurement, electronic inventory management, human resource management information systems and customer management systems, it was not a function of operational performance (Shannak, 2016; Singh & Singh, 2013; Spano & Bello, 2010).

Further, Spathis and Constantinides (2014); Tanwar (2013); Tobie, Etoundi and Zoa (2016) acknowledge that even though numerous challenges are experienced when adopting new technologies in the systems, to a larger enterprise resource planning systems have greatly contributed to enhanced operational performance of both public and private entities in developed and developing countries of the world.

Similarly, Parto et al. (2016); Ongeti (2014); Shannak (2016); Shahzadi and Naveed (2016) opine that despite the fact that technology is associated with organizational efficiency and effectiveness, to some extent it may be a difficult task to implement due to system inertia and human preparedness. The studies concludes that organizations that do not recognize that technology is the driver of operational excellence can experience drastic decline in profits, customer loyalty and market share.

Spano and Bello (2010); Tobie, Etoundi and Zoa (2016); Zeng, Lu and Skibniewski (2011); Zuriekat, Salameh and Alrawashdeh, (2011) emphasize that integrated management information systems are most reliable source of information which can be relied on managerial decision-making. Enterprise Resource Planning systems can facilitate timely decision making and business process reengineering. The studies pointed out that the integrated management information systems adopted can accelerate the speed at which decisions are made concerning production of goods and services thus minimal errors. Further, the studies established that through the use of integrated management information systems, managers are able to collect, analyse, interpret and make strategic decisions for operation efficiency and effectiveness.

Even though extensive studies have been carried out by Spano and Bello (2010); Tobie, Etoundi and Zoa (2016) and Alrawashdeh, (2011), it is observed there exist

contradictory findings on the link between integrated management information systems on operational performance of organizations State owned entities in Kenya thus pertinence of this study to uncover the research gaps. Glova and Gavurova (2012) assert that computer based applications in the system can facilitate planning, production and customer service in a coordinated way. The central philosophy of automating systems is to boost productivity, eliminate wastage, enhance firm internal effectiveness, improve inbound and outbound logistics. Based on the changes on consumer demands, competition, change of regulatory frameworks and standards, modern organizations are compelled to integrate technology in the system in order to enhance efficiency and effectiveness in service delivery.

Further, Gorla, Somers and Wong (2010) concur that with effective implementation of integrated management information systems in competitive entities, financial management, material management, monitoring and evaluation of projects will be facilitated with minimal difficult thus operational excellence. In addition, Ho, Huang and Wu (2011) opine that integration of appropriate technology is a function of operational performance if effectively managed. Mangers who fail to implement new technologies in any organization are perceived to be part of the status quo.

It is also argues by Gorla, Somers and Wong (2010) that the fundamental aim of integrated management information systems is to enhance efficiency and effectiveness, waste reduction, promote continuous improvement, reduce bureaucracies, duplication, improve internal and external communication. Departmental synergies are considered to be one of the factors that may result to improved organizational productivity (Juma & Kimencu, 2017). On the other hand, Glova and Gavurova (2012) postulate that even though technology is considered to be the driver of operational performance, it may be

one of the factors that can lead to organizational inefficiency if not effectively management. With little knowledge of system administrators, technology can lead to embezzlement financial resources of the organization. Technicalities attributed to new technologies can be an avenues of fraudsters in any organization. Juma and Kimencu (2017) revealed that Integrated Financial Management Information System (IFMIS) have become an avenue of misappropriating public funds due to little knowledge on functionality of the systems.

Moreover, Munyiri (2014), Ongeti (2014) and Tolle (2016) acknowledge that despite cost benefits associated with integrated management information systems, to a larger extent, State entities in developing countries and more specifically in Kenya are yet to realize benefits attributed to effective implementation of integrated management information systems. However, it can be concluded from the research work of Munyiri (2014); Ongeti (2014); Tolle (2016); Glova and Gavurova (2012) and Ho et al. (2011) that there is no clear understanding integrated management information systems adopted by State owned entities in Kenya and their impact on operational performance thus forming the basis of this study.

Despite extensive studies conducted internationally and locally, it is viewed that researchers have paid little attention in the public sector thus pertinence of this study to unfold the research gaps. However, most of the studies have been confined on the private sector which is considered to be on the forefront on implementation various technologies to enhance their productivity. Like any commercial entity, this study will seek to examine how the extent of adoption and impact of integrated information systems on operational performance of State owned entities in Ministry of Finance in Kenya.

2.4 Challenges of Integrated Management Information Systems in Organizations

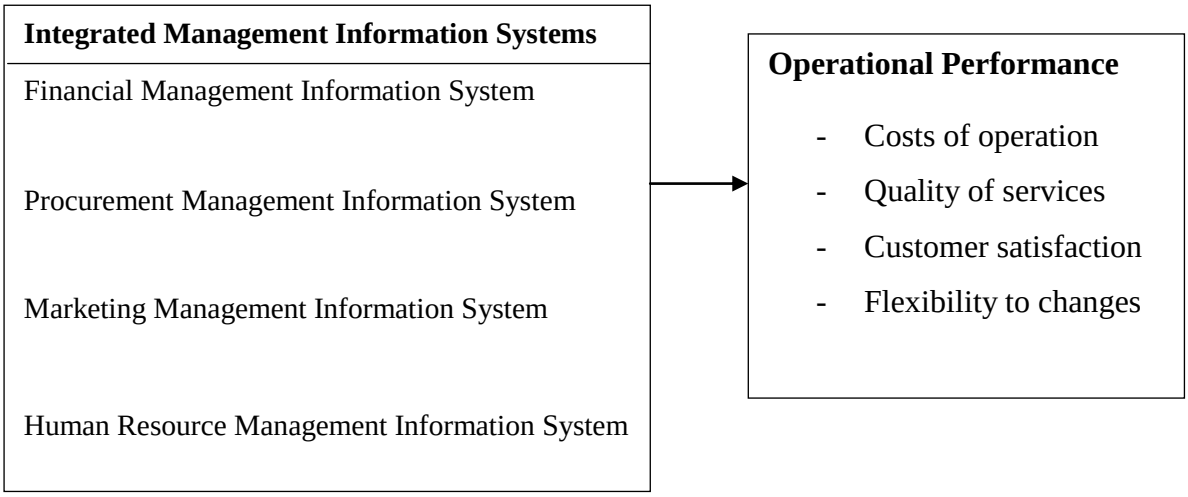
Despite the fact that integrated management information systems influences operational performance of firms (Ongeti 2014; Tolle, 2016), it is observed that a number of challenges are experienced when adopting new IMIS in an organization. Ho et al. (2011) elucidate that despite the benefits associated with IMIS to some extent new technologies can cause organization conflicts if managers do not use appropriate mechanisms when introducing it. It is pointed out that if organizations fail to train workers before introducing any new technologies, to a larger extent organizations may realize employee resistance thus declined organizational productivity.

On the other hand, Gorla, Somers and Wong (2010) acknowledge that introduction of any new system in the organization can take some time before it is accepted by the majority of workers. It is noted by the study that organizations challenges attributed to inability to allocate financial resources to purchase new systems or software can hinder organizational productivity and vice versa. Further, Tobie, Etoundi and Zoa (2016) assert that to a larger extent majority (73%) of the organizations and more specifically public entities are always challenged when introducing new systems to enhance customer service delivery. Changes of competencies, technical skills are management support are considered to be the major obstacles of implementing new technologies.

Similarly, Zuriekat et al. (2011) opine that issues of employee training, organizational structure and organizational philosophies are key factors that need to be considered when introducing new systems or technologies in any competitive enterprise. Complexity of new technologies and costs associated to adopt it are some of the factors that can make an organization find it difficult to achieve its long term goals in the changing business environment (Tolle, 2016).

2.5 Conceptual Framework

Figure 2.1 illustrates the interrelationship between independent variable which constitute of a sub-set of four variables (financial, procurement, marketing and human resource management information systems) on the dependent variable which is operational performance and measured using indicators such as costs of operation, quality of services, customer satisfaction and flexibility to changes.



Independent Variable **Dependent Variable**

Figure 2.1: Conceptual Model (Author, 2018)

As depicted in Figure 2.1, the study revealed that financial, procurement, marketing and human resource management information systems had a positive significant relationship on operational performance which is measured using indicators such as costs of operation, quality of services, customer satisfaction and flexibility of changes. Despite some of the challenges that were experienced when implementing integrated management information systems such as unwillingness of employees to embrace new technologies, inadequate trainings on ICT skills, inadequate financial budgets to support new systems and inadequate awareness by top leadership about new technologies,

integrated management information systems to a larger extent was attributed to operational performance.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter presents the research design which provided the guidelines of collecting and analyzing data, target population, sampling design, data collection technique, validity and reliability of the research instrument and finally data analysis method is outlined.

3.2 Research Design

Bajpai (2011) regards the research design as a model of collecting, analyzing and interpreting data for strategic decision making. The study adopted cross-sectional research design to collect information at one point in time for analysis and presentation in a quantitative manner. Further, the design was considered appropriate because data was obtained from a substantial population with homogenous features. It also facilitated discovery of new knowledge thus prediction and control of the problem.

Crowther and Lancaster (2012) acknowledge that cross-sectional research design is considered appropriate if the researcher intends to use principles of existing theories and empirical findings to make deductive arguments about the problem under investigation. In addition, it focuses on answering to the questions of why, where, what and how. Subsequently, it relies helps to test the quantitative relationship between dependent and independent variables.

3.3 Target Population

The target population refers to the universe from which the sample is selected (Fisher, 2010)). Similalry, Collis and Hussey (2014) describe a population as a well-identified units with common features. In this regard, the information of this study was obtained from 119 respondents selected from the 16 State Owned Entities in the Ministry of

Finance in Kenya as shown in appendix (3). The unit of analysis was State owned entities in the ministry of finance in Kenya while Unit of observation was employees of State owned entities in the ministry of finance in Kenya.

3.4 Sampling Design

Sampling is defined as a process of selecting specific representatives of a study who have material facts or adequate experience about the problem under investigation (Collis & Hussey (2014). Similarly, a sample size is regarded as the representative of the universive

The respondents of this study were categorized into three groups or stratum that included top and middle level management employees selected from the 16 State Owned Entities in the Ministry of Finance in Kenya.

Stratified random sampling technique was adopted to select respondents from each group which represented the entire population. To arrive at the ideal sample size of 92 respondents, scientific formula proposed by Israel (2009) was used and was in the form of $n= N/1+N (e)^2$, where n is sample size; N is population size and α is error term (0.05). Using N=119 in the formula, the calculated sample size (n) was 92 respondents who involved directors, deputy directors and managers of the 16 State Owned Entities in the Ministry of Finance in Kenya.

3.5 Data Collection and Procedure

Questionnaires were used as instruments of collecting primary data. Fisher (2010) avers that questionnaires are considered appropriate in collecting data based on the fact that they facilitate collection of data in a systematic manner for analysis. Further, respondents are given the opportunity to answer questions freely without interference from researchers.

The items of the questionnaire were measured using a likert scale type where 5 denotes to a very great extent and 1 not at all. Trained research assistants were used to administer the questionnaires to respondents using drop and pick later method. Follow-ups were made using phone calls after administering the questionnaires. Further, secondary data was obtained from benchmark reports, strategic plans and financial statements of the 16 State Owned Entities in the Ministry of Finance in Kenya.

3.6 Validity and Reliability of the Research Instrument

3.6.1 Validity Testing

Validity is regarded as the degree to which the research instrument can measure what it purports to measure at a given point in time (Mertler & Vannatta, 2010). Univesity of Nairobi scholars and operations management technocrats were used to measure face and content validity of the research instrument. Tenets of exists theories adopted by this study were also used to measure construct validity. A pilot study was conducted using 4 respondents who did not form the final sample size of the study. The feedback obtained from the piloted sample size was used to modify items of the research instrument.

3.6.2 Reliability Testing

Novikov and Novikov (2013) define reliability as the ability of the research instrument to generate similar results consistently after repeated trials. To establish internal consistency of the research instrument of this study, Cronbach's alpha formular was used where coefficient more than 0.7 were considered to be reliable recommended by Mertler and Vannatta (2010). As illustrated in Table 3.1, it was revealed that all the five variables of the study were reliable based on the fact that Cronbach Alpha values were more than 0.7 as recommended by Mertler and Vannatta (2010).

Table 3.2 : Reliability Results

Variables	No. of Items	Cronbach Alpha	Comments
Financial Management Information System	1	0.842	Reliable
Procurement Management Information System	1	0.724	Reliable
Marketing Management Information System	1	0.718	Reliable
Human Resource Management Information System	1	0.719	Reliable
Operational Performance	1	0.795	Reliable

3.7 Data Analysis and Presentation

After collecting data, questionnaires were scrutinized to ensure data collected was appropriate. Statistical Package of Computer Packages was employed analyze data.To establish whether there existed a relationship between variables, correlation and regression methods undertaken at 95% confidence level. The general linear regression model that was embraced was of the form $\mathbf{Y= \beta o+\beta_1 X_1 +\beta_2 X_2 +\beta_3 X_3 +\beta_4 X_4 + \varepsilon,}$ Where; Y is operational performance of state owned entities in the ministry of finance in Kenya which was the dependent variable, β_1 to β_4 is regression coefficients, X_1-X_4 is independent variables which includes: X_1 is financial management information systems, X_2 is procurement management information systems, X_3 is marketing management information systems and X_4 is human resource management information systems which are independent variables while ε is the error term which denotes factors not included in the model. Finally the data was presented in form of figures and tables.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter discusses findings of the study according to research objectives formulated. The objectives of the study were to determine the extent of adoption of integrated management information systems in State owned entities in ministry of finance in Kenya. The second objective was to assess the impact of integrated management information systems on operational performance and the third objective was to establish challenges of integrated magement information Systems in State owned entities in ministry of finance in Kenya. Quantitative data was analysed using descriptively using statistics such as mean scores, percentages, frequencies and standard deviation. Further, correlation and regression were performed to examine whether there existed a relationship between predictor variables on the dependent variables.

4.2 Response Rates

After administration of 92 questionnaires to the representative sample of the population who comprised on directors, deputy directors and managers from the 16 State Owned Entities in the Ministry of Finance in Kenya, only 83 questionnaires were fully filled and collected. 9 questionnaires were inappropriately filled by respondents. The response rate of this study was 90% are concurs with Guest (2012) who postulates that any response rate above 50% is justifiable for reporting.

4.3 Demographic Characteristics

Table 4.1 provides pertinent results after respondents were asked to indicate their gender.

Table 4.1: Gender of Respondent

Category (Key Informants)	**Status**	**Category**	**Frequency**	**Percentage**
Directors		Male	10	63%
		Female	06	37%
		Sub Total	**16**	**100**
Deputy Directors		Male	09	56%
		Female	07	44%
		Sub Total	**16**	**100**
Managers		Male	39	76%
		Female	12	24%
		Sub Total	**51**	**100**
Total			**83**	

Source: Primary Data

As shown in Table 4.1, the results indicated that majority were male respondents where directors constituted of 63%, deputy directors 56% and managers 76% while the minority were female respondents where directors constituted of 37%, deputy directors 44% and managers 24%. The results revealed that the sixteen State owned entities in ministry of finance in Kenya were dominated by male workers as compared to their female counterparts

Table 4.2 depicts results of respondents after being asked to give information about their age.

Table 4.2: Age of Respondents

Years	Frequency	Percentage
Below 25 years	05	06%
26-35 years	16	19%
36-45 years	25	30%
Above 46 years	37	45%
Total	**83**	**100**

Source: Primary Data

As shown in Table 4.2, majority (45%) of the respondents were aged above 46 years, 30% of them were aged between 36-45 years, 19% of them were aged between 26-35 years and 6% of them were aged below 25 years. The results imply that majority of the respondents of the sixteen State owned entities in ministry of finance in Kenya who had attained the age of 46 years and above had high chances of joining management positions such as directors, deputy directors and managers as compared to employees below 45 years. Based on the job groups, employees were promoted to management positions based on the number of years served, qualification and experience possessed.

Table 4.3 illustrates findings given by respondents after being asked to provide information concerning their level of education.

Table 4.3: Respondents Level of Education

Level	Frequency	Percentage
Postgraduate	11	13%
Bachelors	72	87%
Total	**83**	**100**

Source: Primary Data

As depicted in Table 4.3, the results indicated that majority (87%) of the respondents were holders of first degree while 11% of them were postgraduate degree holders. The

findings imply most of the workers in State owned entities in ministry of finance in Kenya who worked as deputy directors and managers were first degree holders. Most of them were promoted to be directors, deputy directors and managers based on the years of experience since they joined their respective entities. It was noted that employees with postgraduate were few in State entities due to personal and organizational constraints.

Respondents of the study were asked to indicate the period they had worked and the findings are illustrated in Table 4.4:

Table 4.4: Duration of Work

Level	**Frequency**	**Percentage**
2-6 Years	07	08%
7-11Years	23	28%
12 Years and above	53	64%
Total	**83**	**100**

Source: Primary Data

As illustrated in Table 4.4, majority (64%) of the respondents had worked for a period more than 12 years, 28% of them had worked for a period between 7-11 years and 08 % of them had worked for a period between 2-6 years. This findings imply that majority of the employee who worked as directors, deputy directors and managers in State entities had adequate experience and attained the requirements for managerial positions and promotions as stipulate by employment policies.

Respondents were requested to provide information concerning the period of years their entities had operated and the findings are illustrated in Table 4.5:

Table 4.5: Age of the Entity

Level	Frequency	Percentage
2-6 Years	05	06%
7-11Years	11	13%
12 Years and above	67	81%
Total	**83**	**100**

Source: Primary Data

As shown in Table 4.5, the study indicated that majority (81%) of the entities had operated for a period more than 12 years in Kenya, 13% of the respondents had been in operation for a duration of between 7-11 years and 6% of the respondents had been in operation for a duration of between 2-6 years. This findings imply that most of the State entities had existed for a long period of time to implement integrated information management systems to enhance operational performance.

4.4 The Use of Integrated Financial Management Information Systems

4.4.1 Financial Management Information Systems

The respondents were asked to indicate their level of agreement on the effect of financial management information systems and operational performance and the results are depicted in Table 4.6:

Table 4.6: Financial Management Information Systems

Statements	N	Mean	S.D
My entity has financial systems that provide timely information for management reports	83	4.98	.781
Systems of my entity provides information that help in budget preparation	83	4.71	.687
The information provided helps in budget implementation	83	4.26	.884
System information facilitates communication and reporting of financial statements on a timely manner	83	4.23	.587
The information provided by the system facilitates accountability and transparency	83	4.21	.664
System information facilitates timely audits	83	4.11	.673
My entity collects accurate financial information for decision making	83	4.04	.596
My entity has accurate and reliable financial information	83	2.59	.498
Financial decisions made by my organization always supports inter-agency decisions	83	1.88	.744
Average Mean Score		**4.45**	

Source: Primary Data

Table 4.6 indicates that the mean score for 7 of the 9 statements was more than 4.00 which implies that most of the respondents (73%) agreed while the rest were of the contrary opinion. The findings imply that State entities in the ministry of Finance in Kenya were striving to embrace financial management technologies in relying on system information to develop budgets, communicate, generate financial reports and enhance accountability.

Despite internal and external challenges such as capacity development, leadership support, change of financial regulations, competition and globalization, it was noted that majority of the State entities in the ministry of finance experienced misappropriation of funds allocated for various development projects due to weaknesses of financial management technologies adopted such as integrated financial management system (IFMIS). Security to financial management information systems was one of the factors that hampered the effectiveness of the systems.

This findings are consistent with that of Gorla, Somers and Wong (2010), Ho, Huang and Wu (2011) who pointed out that despite benefits of financial management information systems such as timely financial information and enhanced accountability and transparency, systems were associated with systemic and individual challenges such as knowledge and skills.

4.4.2 Procurement Management Information System

The respondents were requested to provide information concerning their level of agreement on the effect of procurement management information systems and operational performance of State entities and the results are illustrated in Table 4.7:

Table 4.7: Procurement Management Information Systems

Statements	**N**	**Mean**	**SD**
Systems enhances accountability in the procurement process	83	4.78	.884
Systems enhances transparency in the procurement process	83	4.61	.664
Procurement managers can access multiple suppliers with the intended products and services	83	4.58	.587
Violation of procurement regulations are minimized by the system	83	4.47	.673
Procurement systems provides accurate information about bidders	83	4.10	.4.91
Inflow and outflow of goods is accurately determined by the system	83	2.10	.498
Chances of manipulating and altering bids are minimal	83	2.01	.374
Quantity of goods required are accurately determined by the system	83	1.33	.596
Bids are evaluated on a timely manner	83	1.03	.411
Average Mean Score		**3.33**	

Source: Primary Data

Table 4.7 illustrates that the mean score for 5 of 9 items was more than 4.00 which implied that most of the responded agreed with the statements while the rest were of the

contrary opinion. The findings implies that even though procurement management information systems influenced operational performance in terms of accountability, transparency, supplier partnership and adherence to procurement regulations, to some extent, there was no projection on goods procured, systems did not determine inflow and outflow of goods, bids were not evaluated on time and chances of manipulating bids were likely.

This findings correspond with that of Hunton, Lippincott, and Reck (2013), Juma and Kimencu (2017), Kakwezi and Nyeko (2010) who identified that despite the attempts of public entities to embrace procurement systems, most of the public entities were challenged to actualize technologies such as e-procurement, electronic sourcing and electronic ordering due to structural rigidity and lack of support from the management.

4.4.3 Marketing Management Information System

The respondents were required to point out the extent to which they agreed with the effect of marketing management information systems and operational performance and findings are presented as shown in Table 4.8:

Table 4.8: Marketing Management Information Systems

Statements	N	Mean	SD
Marketing information systems facilitates analysis of customer needs and wants on a timely manner	83	2.83	.311
Systems facilitates timely planning on how to satisfy customer needs and wants	83	2.53	.316
Systems facilitates production of quality products and services based on consumer research	83	2.18	.684
Systems facilitates timely evaluation of customer satisfaction	83	2.14	.306
Systems facilitates collection of customer information though online platforms	83	2.11	.644
Systems profile customer information based on specific needs	83	2.08	.537
My entity relies on intelligence collected from print and electronic media to make marketing decisions	83	2.08	.255
Systems information enable my organization to scan the business environment before producing goods and services	83	2.03	.473
Systems upgrade always improves customer experience and organizational productivity	83	2.03	.239
Average Mean Score		**2.22**	

Source: Primary Data

Table 4.8 demonstrates that the mean score for 9 items was less than 2.00 which implied that most the respondents did not agree while the rest were in agreement with the statement. The findings imply that to a larger extent, State entities did not use system information to embracing marketing initiatives such as production of research based products and services, service delivery using online platforms, gather market intelligence, evaluate customer satisfaction, upgrade service delivery systems such as websites or profile customer needs and wants. It was noted that the State entities rarely embraced marketing initiatives because their core business was service delivery but not profit making like any other commercial entities.

This findings are in line with that of Bijuna, Mohan and Sequeira (2016), Koech (2016), Munyiri (2014) and Nicolaou, et al. (20130 who pointed out that embracing marketing

initiatives such as service improvement and marketing research had a positive influence on organizational competitiveness though it was complex to maintain customer loyaltydue to competition and change of consumer needs and wants. It was noted that marketing products and services using online platforms by the government was not a practice of State Corporation but effectively embraced by commercial enterprises.

4.4.4 Human Resource Management Information System

The respondents were required to provide information concerning the effect of human resource management information systems and operational performance and resulted are depicted in Table 4.9:

Table 4.9: Human Resource Management Information Systems

Statements	N	Mean	SD
HRM systems can monitor employee performance	83	4..23	.336
HRM systems minimizes paperwork in the organization	83	4.18	.654
HRM systems enhances communication among workers	83	4.11	.584
HRM systems safeguards employee information	83	4.11	.453
HRM systems facilitates processing of payroll information on a timely manner	83	4.02	.744
HRM systems facilitates employee appraisal	83	2.28	.665
HRM systems can assess employee needs and recommend appropriate trainings	83	2.13	.623
HRM systems enable employees to complete tasks on a timely manner	83	2.09	.486
HRM systems provides timely information to workers for decision making	83	2.02	.781
Average Mean Score		**2.12**	

Source: Primary Data

Table 4.9 shows that the mean score for 5 of 9 items was more than 4.00 indicating that most of the respondents were in agreement while the rest opposed the statements. The findings imply that despite the fact that human resource management information systems reduced paper work, enhanced communication, safeguarded employee information, facilitated payroll information and monitored employee performance, to some extent the systems did not facilitate employee appraisal, give reliable information and facilitate timely completion of tasks.

This findings concurwith that of Nyamweya (2017), Oberi (2016), Ongeti (2014), Spano and Bello (2010) who ascertained that evaluating employee through online platforms, sourcing employees using online databases and providing workers with personal computers not only influenced performance of organizations but also enhanced employee commitment to organizational goals.

4.5 Challenges of Integrated Management Information Systems

Table 4.10 provides pertinent results provided by respondents after being asked to indicate the challenges of integrated management information systems and operational performance in their respective State Corporations.

Table 4.10: Challenges of Integrated Management Information Systems

Statements	N	Mean	S.D
New workers employed are computer literate	83	4.31	.714
My organization is dedicated on upgrading existing systems	83	2.68	.791
My organization is always willing to train workers on new technologies	83	1.94	.806
My organization allocates adequate budgets to purchase new systems to enhance customer service delivery	83	1.84	.675
Employees of my organization are given personal computers to facilitate operational efficiency	83	1.58	.671
Employees of my organization are willing to use new technologies in service delivery	83	1.53	.779
Top leadership is willing to create maximum awareness about new technologies launched	83	1.14	.563
Average Mean Score		1.7	

Source: Primary Data

As illustrated in Table 4.10, the mean score for 1 of 9 indicators was more than 4.00 which means that to a small extent a few respondents (13%) agreed with the statement. The remaining 87% were either neutral or in disagreement with the indicators. The findings imply that even though the benefits attributed to integrated management information systems in any systems, many were challenges experienced by State entities such as inability to upgrade systems, lack of capacity development, high costs of maintaining records, employee resistance to new technologies inadequate budgets allocated to support new technologies in financial, procurement, marketing and human resource systems. This findings are supported by Spathis and Constantinides (2014). Zeng, Lu and Skibniewski (2011) and Zuriekat et al. (2011) whom acknowledge that new technologies introduced in organizations and more specifically in public entities

may fail due to challenges of leadership, employee resistance and lack of appropriate skills and knowledge in the system.

4.6 Operational Performance

To understand operational performance parameters that were used by State Corporations, Table 4.11 provides pertinent results provided by the respondents.

Table 4.11: Operational Performance

Statements	**N**	**Mean**	**S.D**
Time taken to serve customers or process claims translate to operational performance	83	4.90	.636
Flexibility of my organization to adjust to changing consumer demands and implement new changes reflects operational performance	83	4.67	.345
Costs incurred reflects operational performance of my entity	83	4.46	.657
Minimal number of complaints reflects operational performance	83	4.35	.567
Employee willingness to provide quality services reflects operational performance	83	4.25	.834
Number of employees assigned to accomplish a task reflects operation efficiency	83	4.23	.734
Minimal mistakes and errors made reflects operational performance	83	4.12	.234
Ability of my entity to improve services reflects operational performance	83	4.11	.830
Reliability of services to customers reflects performance	83	4.03	.841
Average Mean Score		**4.53**	

Source: Primary Data

As demonstrated in Table 4.11, the mean score for the 9 indicators was more than 4.00 which implies that to a larger extent majority of the respondents (90%) were in agreement with the indicators. The remaining 10% of the respondents were either neutral or in disagreement with the statements/indicators. The findings implies that financial, procurement, marketing and human resource systems influenced operational performance of State entities in terms of quality services, minimal costs operation,

customer satisfaction, employee motivation, flexibility of the entity to adjust to business environment changes and minimal errors committed during service delivery.

This findings are in line with that of Nyamweya (2017), Oberi (2016), Ongeti (2014), Spano and Bello (2010) who noted that integrated management information systestems not only contribute to enhanced productivity but also facilitate organizational competitiveness.

4.7 Qualitative Data Analysis

This study incorporated information obtained from open-ended questions, benchmark reports, strategic plans and financial statements of the 16 State Owned Entities in the Ministry of Finance in Kenya. Content analysis was used to review critical themes.

It was observed that despite the fact that financial management information systems enhanced operation performance of State entities in terms of providing timely information for budget development and internal audits, to a larger extent it was noted that most of the State entities were not embracing financial management technologies to their full potential in order to enjoy benefits such as reduced costs of operation, quality customer service delivery and adoptability to changing business environment.

Even though procurement management information system influenced operational performance of State entities, it was noted that most of the State entities did not embrace procurement technologies during procurement of goods and services. Electronic bidding, electronic inventory control, electronic procurement were practices which reflected procurement management information system were not embraced to a larger extent by State entities in the Ministry of Finance in Kenya.

It was revealed by the study that marketing management information systems had a positive influence on operation performance of State entities. However, it was pointed

out that marketing technologies were not embraced by State entities in the Ministry of Finance in Kenya. This was due to inability of State entities to analyze customer needs, formulate marketing plans, use online platforms to promote its goods and services and continuous improvement of customer services.

The study found out that human resource management information systems had a positive influence on operation performance of State entities though the extent to which human resources technologies were embraced in terms of employee payroll systems, communication and appraisal were practiced on a small extent or not at all.

To a larger extent, it was noted that numerous challenges such as use of technology in service delivery, lack of trainings on computer skills, system upgrade and website management were challenges which hampered operational performance of State entities in the Ministry of Finance in Kenya.

Despite the challenges experienced by State entities when implementing integrated management information systems, it was revealed that operational performance was measured using costs of operation, ability to implement changes, customer satisfaction and quality of service delivery.

4.8 Inferential Statistics

Normality, linearity, homogeneity and multicollinearity diagnostic tests were conducted to confirm statistical assumptions of the model.

4.9 Diagnostic Tests

4.9.1 Normality Test

Shapiro-Wilk test was used to test normality. According to Guest (2010), data is seen to be normally distributed when statistical figures ranges from zero to one and significance values are less than 5%.

Table 4.12: Normality Test

Variables	Statistics	df	Sig
Financial Management Information System	0.872	83	0.003
Procurement Management Information System	0.811	83	0.002
Marketing Management Information System	0.746	83	0.000
Human Resource Management Information System	0.711	83	0.000

Primary Data

As shown in Table 4.12, the consolidated variables of integrated management information system variables had figures ranging from -0.1 to +1.0 which indicated normality of data. The calculated probability values of the four independent variables were 0.872, 0.811, 0.746 and 0.711) indicating that they met the threshold of more than 0.05 level of significance as recommended by Crowther and Lancaster (2012).

4.9.2 Linearity Test

To determine linearity of data, Pearson's product moment of correlation coefficient was used to establish the association between operational performance and financial, procurement, marketing and human resource management information systems shown in Table 4.13.

Table 4.13: Linearity Test

Independent Variables		**Operational Performance**
Financial Management Information System	Pearson Correlation	0.546**
	Sig(2-tailed)	0.001
	N	83
Procurement Management Information System	Pearson Correlation	0.437**
	Sig(2-tailed)	0.000
	N	83
Marketing Management Information System	Pearson Correlation	0.436**
	Sig(2-tailed)	0.002
	N	83
Human Resource Management Information System	Pearson Correlation	0.336**
	Sig(2-tailed)	0.010
	N	83
****p< 0.05**		

Primary Data

Table 4.13, reveals that there exists a positive and significant linear relationship between operational performance and financial management information systems ($r=0.546$, $p<0.05$), procurement management information systems ($r=0.437$, $p<0.05$), marketing ($r=0.436$, $p<0.05$) and human resource management ($r=0.336$, $p<0.05$) at 5% level of significance. The findings reveals that there was a co-movement of variables in the same direction thus facilitating causal relationship as recommended by Collis and Hussey, (2014).

4.9.3 Homogeneity Test

To test of homogeneity of Variances, Levene's Test was used which confirmed that the dependent variable exhibited equal variance across the four predictor variables with the calculated probability values greater than 0.05 as recommended by Novikov and Novikov (2013).

Table 4.14: Homogeneity Test

Variables	Lavene Statistics	df	Sig
Financial Management Information System	6.456	1	0.719
Procurement Management Information System	6.432	1	0.549
Marketing Management Information System	6.334	1	0.554
Human Resource Management Information System	5.324	1	0.742
Operational Performance	5.047	1	0.057

Primary Data

As shown in Table 4.14, the results indicate that the calculated probability of the five variables of the study were greater than 0.05 ranging between 0.047 to 0.719. Since significance values of the five variables were greater than 0.05, variance homogeneity was confirmed as as proposed by Fisher (2010).

4.9.4 Multicollinearity Test

To establish whether there existed multicollinearity problem in the model, regression analysis as shown in Table 4.15.

Table 4.15: Multicollinearity Test

Model	Collinearity Statistics	
Financial Management Information System	**Tolerance**	**Mean VIF**
Procurement Management Information System	0.846	1.568
Marketing Management Information System	0.882	1.467
Human Resource Management Information System	0.712	1.245
Operational Performance	0.678	1.231

Primary Data

As depicted in Table 4.12, the results reveals VIF of the five variables of the study were less than 10 and Tolerance greater than 0.1 respectively, confirming multicollinearity as

recommended by Collis and Hussey (2014). Based on the results, it was confirmed that there was no multicollinearity problem.

4.10 Correlation Coefficients

The study sought to establish an understanding of the existence of a significant relationship between integrated management information systems (financial, procurement, marketing and human resource management information systems) and the dependent variable (operational performance). To achieve this, correlation results are presented in Table 4.16. Coefficient of determination as shown in Table 4.16 demonstrates the extent to which variations in the dependent variable can be explained by the variation in the independent variables (financial, procurement, marketing and human resource management information systems).

Pearson product moment was used to determine the level of significance of bivariate relationship (financial, procurement, marketing and human resource management information systems). According to Guest (2010), correlation coefficient (r) = ±1.00 indicates that there is a positive or negative correlation between variables. If (r) = +1, it depicts a strong relationship while -1 depicts a weak relationship. Further, if (r) = 0, it depicts that there is no relationship between variables. A correlation was considered significant when the probability value was equal to or less than 0.05.

Table 4.16: Correlations Coefficients on the Relationship between Integrated Management Information Systems and Operational Performance

Variable	**Pearson Statistics**	**1**	Financial Management Information System	Procurement Management Information System	Marketing Management Information System	Human Resource Management Information System	Operational Performance
Financial Management Information System	Pearson Correlation Significance (2-tailed) Sample size	.149** 0.002 21					
Procurement Management Information System	Pearson Correlation Significance (2-tailed) Sample size	.136** 0.010 21	1 21				
Marketing Management Information System	Pearson Correlation Significance (2-tailed) Sample size	.152** 0.000 21	.143**	1			
Human Resource Management Information System	Pearson Correlation Significance (2-tailed) Sample size	.152** 0.000 21	.143**	1			
Operational Performance	Pearson Correlation Significance (2-tailed) Sample size	0.032 0.000 83	.616** 0.023 83	.642** 0.011 83	.581** 0.020 83	.481** 0.000 83	1 **83**

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

As shown in Table 4.16, the results indicate that there is positive significant relationship between (financial, procurement, marketing and human resource management information systems) on the dependent variable (operational performance). Financial management information systems was significant ($r = .616$, $p < 0.023$), procurement management information systems ($r = .642$, $p < 0.011$), marketing management information systems ($r = .581$, $p < 0.020$) and human resource management information systems ($r = .481$, $p < 0.000$) at the 0.05 level in a two tailed test. This results implies that there exists a strong positive relationship between consolidated integrated management information systems and operational performance of State owned entities in the ministry of finance, Kenya.

4.11 Regression Analysis on the Relationship Between Integrated Management Information Systems and Operational Performance

To confirm whether there existed a statistical relationship between predictor variables (financial, procurement, marketing and human resource management information systems) on the dependent variable (operational performance), multiple regression analysis was undertaken as shown in Table 4.17.

Table 4.17: Regression Coefficients on the Relationship between Financial Information Systems and Operational Performance

Table 4.17 a: Model Summary

Model							Change Statistics		
1	R	R Square	Adjusted R Square	Std. Error of Estimate	R Square Change	F Change	df1	df2	Sig. F Change
	378[a]	.143	.139	82113	.143	41.243	1	248	000

A Predictors: (Constant), X1

Source: Primary Data

Table 4.17 b: ANOVA[b]

Model		Sum of Square	Df	Mean Square	F	Sig
1	Regression	27.808	1	27.808	41.243	.000[a]
	Residue	167.215	248	.674		
	Total	195.023	249			

Predictors: (Constant), X1
b. Dependent Variable: Operational Performance

Source: Primary Data

Table 4.17 c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	Constant	1.175	.288		4.074	.000		
	X1	.578	.090	.378	6.422	.000	1.000	1.000

a. Dependent Variable: Operational Performance

Source: Primary Data

Table 4.17 shows the results of regression analysis on financial information systems in relation to operational performance of State entities in the ministry of finance in Kenya. A linear regression F-test using ANOVA was carried out to test whether financial information systems influenced operational performance of State entities in the ministry of finance in Kenya. The linear regression model of financial information systems against operational performance of State entities in the ministry of finance in Kenya was found to be significant (F, 41,247= 57.8, $p < 0.000$) at 5% level of significance.

The resulting goodness of fit was $R^2 = 0.143$ indicating that 14.3% of the variability in Y is explained by financial information systems index while R= 37.8%. This indicates that there is positive significant relationship between financial information systems and operational performance of State entities in the ministry of finance in Kenya.

Table 4.18: Regression Coefficients on the Relationship between Procurement Information Systems and Operational Performance

Table 4.18 a: Model Summary

Model							Change Statistics		
2	R	R Square	Adjusted R Square	Std. Error of Estimate	R Square Change	F Change	df1	df2	Sig. F Change
	.559[a]	.052	.048	.86328	0.52	13.687	1	248	.000

a. Predictors: (Constant), X2

Source: Primary Data

Table 4.18 b: ANOVA[b]

Model		Sum of Square	Df	Mean Square	F	Sig
2	Regression	10.200	1	10.200	13.687	.000[a]
	Residue	184.183	248	.745		
	Total	195.023	249			

Predictors: (Constant), X2
b. Dependent Variable: Operational Performance

Source: Primary Data

Table 4.18 c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
2	Constant	1.874	.308		6.077	.000		
	X2	.293	.079	.229	3.700	.000	1.000	1.000

a. Dependent Variable: b. Dependent Variable: Operational Performance

Source: Primary Data

As shown Table 4.18 shows the results of regression analysis on procurement information systems in relation to operational performance of State entities in the ministry of finance in Kenya. A linear regression F-test using ANOVA was carried out to test whether procurement information systems influenced operational performance of State entities in the ministry of finance in Kenya. The linear regression model of procurement information systems against operational performance of State entities in the ministry of finance in Kenya was found to be significant (F, 13.68 = 29.3, $p < 0.001$) at 5% degree of significance.

The resulting goodness of fit was $R^2 = 0.52$ indicating that 52% of the variability in Y is explained by procurement information systems index while R= 55.9%. This indicates that there is a positive significant relationship between procurement information systems and operational performance of State entities in the ministry of finance in Kenya.

Table 4.19: Regression Coefficients on the Relationship between Marketing Information Systems and Operational Performance

Table 4.19 a: Model Summary

Model							Change Statistics		
3	**R**	**R Square**	**Adjusted R Square**	**Std. Error of Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
	.454[a]	.206	.203	.79191	.206	63.983	1	.247	.000

a Predictors: (Constant), X3

Source: Primary Data

Table 4.19 b: ANOVA[b]

Model		**Sum of Square**	**Df**	**Mean Square**	**F**	**Sig**
3	Regression	40.125	1	40.125	63.983	000[a]
	Residue	54.899	247	627		
	Total	95.023	248			

Predictors: (Constant), X3
b. Dependent Variable: Operational Performance

Source: Primary Data

Table 4.19 c: Coefficients[a]

		Unstandardized Coefficients		**Standardized Coefficients**	**T**	**Sig**	**Collinearity Statistics**	
Model		**B**	**Std. Error**	**Beta**			**Tolerance**	**VIF**
3	Constant	.934	.263		3.553	.000		
	X1	.599	.075	.454	7.999	.000	1.000	1.000

a. Dependent Variable: Operational Performance

Source: Primary Data

As shown Table 4.19 shows the results of regression analysis on marketing information systems in relation to operational performance of State entities in the ministry of finance in Kenya. A linear regression F-test using ANOVA was carried out to test whether marketing information systems influenced operational performance of State entities in the ministry of finance in Kenya. The linear regression model of marketing information systems against operational performance of State entities in the ministry of finance in

Kenya was found to be significant (F, 64.0 = 59.9, p < 0.000) at 5% degree of significance.

The resulting goodness of fit was $R^2 = 0.206$ indicating that 20.6% of the variability in Y is explained by marketing information systems index while R=45.4%. This indicates that there is a positive significant relationship between marketing information systems and operational performance of State entities in the ministry of finance in Kenya.

Table 4.20: Regression Coefficients on the Relationship between Human Resource Information Systems and Operational Performance

Table 4.20 a: Model Summary

Model							Change Statistics		
4	**R**	**R Square**	**Adjusted R Square**	**Std. Error of Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
	.344[a]	.201	.203	.69181	.204	53.973	1	.247	.000

a Predictors: (Constant), X4

Source: Primary Data

Table 4.18 b: ANOVA[b]

Model		Sum of Square	Df	Mean Square	F	Sig
4	**Regression**	38.115	1	41.115	53.983	000[a]
	Residue	44.779	247	667		
	Total	55.013	248			

Predictors: (Constant), X4
b. Dependent Variable: Operational Performance

Source: Primary Data

Table 4.18 c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
4	Constant	.734	.263		3.443	.000		
	X4	.493	.065	.354	6.889	.000	1.000	1.000

a. Dependent Variable: Operational Performance

Source: Primary Data

As shown Table 4.20 shows the results of regression analysis on human resource information systems in relation to operational performance of State entities in the ministry of finance in Kenya. A linear regression F-test using ANOVA was carried out to test whether human resource information systems influenced operational performance of State entities in the ministry of finance in Kenya. The linear regression model of human resource information systems against operational performance of State entities in the ministry of finance in Kenya was found to be significant (F, 54.0 = 49.3, $p < 0.000$) at 5% degree of significance.

The resulting goodness of fit was $R^2 = 0.201$ indicating that 20.1% of the variability in Y is explained by human resource information systems index while R=45.4%. This indicates that there is a positive significant relationship between human resource information systems and operational performance of State entities in the ministry of finance in Kenya.

4.12 Discussion of Findings

The study established that there exists a positive significant relationship between financial, procurement, marketing and human resource management information system. This findings are supported by Shuhaimi et al. (2016), Shannak (2016), Shahzadi and Naveed (2016) whom established that financial management information systems are

viewed to be a function of organizational performance that can be measured in terms of service quality, zero tolerance to wastage, new product development and increased profits. Parto, Sofiana and Saat (2016) acknowledge that despite challenges experienced when introducing procurement systems, to a larger extent organizations that embrace it can enhance stakeholder value and improve organizational efficiency and effectiveness.

Further, Ongeti (2014), Otieno (2010) and Oberi (2016) assert that marketing management information systems are directly correlated to customer service delivery. Firms that embrace marketing information systems can gather marketing intelligence concerning consumer behaviours thus result to development of innovative products and services (Nyamweya, 2017). Subsequently, human resource management information systems is conceptualized to be one of the strategies organizations embrace to attract and retain talents (Nicolaou & Bhattacharya, 2014).

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the research findings in line with the objectives of the study as outlined in chapter one. Conclusions and recommendations are made based on the findings of the study. Limitations are discussed and suggestion for further study is provided.

5.2 Summary of Findings

The research findings showed that there exists a positive substantial association between financial management information systems and operational performance of State entities in the ministry of finance in Kenya. However, it was noted that despite the fact that there was positive relationship, State entities were experiencing challenging of implementing efficient and effective financial management systems to facilitate financial decisions such as timely preparation of financial statements, audit reports and budgetary allocation. Some of this challenges included lack of management support, budgetary constraints, systems security threats and lack of appropriate trainings among workers

The study ascertained that there existed a positive significant relationship between procurement management information systems and operational performance of State entities in the ministry of finance in Kenya. However, it was observed that to a larger extent procurement systems such as e-procurement, e-ordering and e-sourcing were not embraced by State entities due to challenges of procurement regulation, capacity development, economic constraints and employee resistance.

The study revealed that there existed a moderate relationship between marketing management information systems and operational performance of State entities in the ministry of finance in Kenya. Nevertheless, it emerged that State entities were not embracing marketing initiatives such as consumer research, environmental analysis and product development since they were not commercial entities. Service inconsistencies among State entities were attributed to deteriorating customer loyalties thus little confidence on the quality of public service by customers.

The research findings established an existence of a strong positive association between human resource management information systems and operational performance of State entities in the ministry of finance in Kenya. Nevertheless, is was noted State entities did not embrace human resource technologies to formulate decisions such as human resource planning, employee evaluation and employee recruitment using electronic human inventories.

The study found out that State entities in the ministry of finance in Kenya were experiencing deteriorating operational performance in terms of change implementation, costs incurred, customer satisfaction and service improvement. Some of this challenges which were attributed during implementation of integrated management information systems includes inadequate leadership support, employee resistance, inadequate employee training, inappropriate technology and budgetary constraints.

5.3 Conclusion

The results of the study indicated that State entities were experiencing deteriorating operational performance in terms of customer satisfaction, service quality, change implementation and minimal costs of operation due to inability to adopt appropriate

financial management information systems in terms of financial report preparation, internal audits, financial forecasting and budget development.

The study ascertains that State entities were experiencing deteriorating operational performance due to inability to embrace procurement technologies such as electronic ordering, electronic sourcing and electronic-inventory management due to issues of procurement regulations, structural rigidity and inappropriate knowledge and skills among workers.

The study identified that State entities were experiencing deteriorating performance in terms of customer service delivery due to challenges of embracing marketing initiatives such as consumer research, product or service improvement and marketing products and services through online platforms.

The study established that State entities were experiencing deteriorating performance due to challenges of embracing human resource management systems. Inability to anticipate the number of employees needed to accomplish particular goals in the organization, quantity of goods and services required, recruitment and evaluation of workers through online and matching human competencies with duties and responsibilities were major problems which contributed to customer service gaps.

The study concludes that implementing integrated management information systems in State entities was attributed to challenges such as inadequate leadership support, employee resistance, competition, inadequate budgetary allocation, structural rigidity and inappropriate knowledge and skills among workers.

5.4 Recommendations

The study identified that financial management information system adopted by State entities in the ministry of finance were hindered by security threats to the system. Therefore, this study recommends that top managers of State entities should ensure that financial management systems introduced are protected by engaging competent technological firms or consultant to protect systems from internal and external system hackers which may result to loss of funds.

The study found out that State entities were not embracing procurement management information systems due to change of procurement regulations, employee resistance and inappropriate procurement technologies to support supply chain activities. Therefore, this study recommends that procurement directors working in State entities should ensure that all procurement activities are conducted within the legal frameworks and key stakeholders of the systems such as employees and suppliers are involved in the procurement process.

The study established that State entities did not embrace initiatives such as consumer research, product or service development and improvement, market intelligence and marketing products through online like commercial entities. Therefore, this study recommends that State entities should partner with marketing agencies to ensure that customers are given quality services similar with those of commercial enterprises. Managers of State entities should ensure all employees are equipped with customer care skills and knowledge in order to offer differentiated products and services.

The study found out that human resource management information system embraced by State entities did not fully enhance operational performance. Therefore, this study

recommends that policies should be formulated by the public service commission to ensure all public servants are trained on computer skills, promoted based on performance online evaluation and human resource inventory information is used to match individual competencies with duties and responsibilities.

The study noted that challenges such as inadequate management support, individual resistance, change or regulations, budgetary constraints, inadequate trainings and inappropriate technologies were experienced when introducing integrated management information systems in State entities. Therefore, this study recommends that to enhance operation performance of State entities, top leadership should ensure that employees equipped with appropriate knowledge and skills to operate newly introduced technologies in services deliver. Top leaders should ensure they create an environment that enhances creativity and innovation among workers. Top leaders should ensure that employees are sensitized about benefits of embracing modern technologies in service delivery and reward workers for effectively embracing technological initiatives at the workplace.

5.5 Limitations of the Study

The limitations of the study took on conceptual, contextual, and methodological manifestations. Conceptually, other studies only focused on determining the effect of enterprise resource planning systems on performance of parastatals in Kenya. Therefore, this limitation was overcome by this study examining the relationship between financial, procurement, marketing and human resource management information systems on operational performance of State entities in the ministry of finance. Furthermore, other future studies introduced moderating or intervening variables in the relationship between

independent and dependent variable. This limitation was overcome by this study testing the association that exists between each of the dependent variables against the corresponding independent variables.

Contextually, the other studies conducted were limited to different countries and sectors. This limitation was overcome by this study focusing on State entities in the ministry of finance in Kenya.

Methodologically, some studies adopted longitudinal, correlational, exploratory and case study. In contrast, this limitation was overcome by this study adopting cross-sectional research which facilitated discovery of new knowledge and prediction of the problem under investigation. Further, it facilitated collection and presentation of data using quantitative and qualitative approach. Some studies used interview guides and observation checklist form to collect data.

This study overcame this limitation by using questionnaire to collect data from a sizeable population with homogenous features. Lack of cooperation from some respondents during data collection by previous researchers was overcome by this study through informing the respondents the objective of the study and assurance of confidentiality of the information provided.

5.6 Suggestion for Further Research

Since the study was limited to four consolidated variables which include: financial, procurement, marketing and human resource management information systems, the study suggests that other researchers should seek to investigate other variables in isolation or in a consolidated form and their influence on service delivery in other State entities in Kenya

Other studies should seek to test the moderating and intervening variables that influence the relationship between integrated management information systems and operational performance. Other researchers should seek to replicate a similar study in other countries.

Last but not least, researchers should go ahead and conduct comparative studies among countries in East Africa.

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APPENDICES

Appendix 1: Introductory Letter

C/O

MAUREEN ACHIENG OKEYO

D61/77331/2015

UNIVERSITY OF NAIROBI

TO WHOM IT MAY CONCERN

Dear Respondent,

REF: MASTER OF BUSINESS ADMINISTRATION PROPOSAL

This letter is to express my desire to collect academic data to enable me complete my research project. My name is Maureen Okeyo. I am an MBA student at University of Nairobi. The topic of study is: ***"Integrated Management Information Systems and Operational Performance of State owned Entities in the Ministry of Finance".***

The data collected will be used only for academic purposes and will be treated with utmost confidentially. Any assistance accorded will be highly appreciated.

Yours sincerely,

Sign_____

Appendix 2: Questionnaire for Employees of State owned Entities in the Ministry of Finance

This research questionnaire is aimed at collecting primary data to be used for analysis in an academic study. The questionnaire is to be administered to the relevant respondents most of whom are senior staff of state owned entities at the ministry of finance. The responses shall be handled with utmost strictness and confidentiality.

SECTION A: BACKGROUND INFORMATION

1. **Gender of Respondent**
   a) Male [ ]
   b) Female [ ]
2. **Age of Respondent**
   a) Below 25 years [ ]
   b) 26-35 years [ ]
   c) 36-45 years [ ]
   d) Above 45 years [ ]
3. **Respondent Level of Education**
   a) Certificate [ ]
   b) Diploma level [ ]
   c) Bachelors level [ ]
   d) Postgraduate level [ ]
   e) Others [ ]
4. **Respondent Years of Service**
   a) Less than 1 year [ ]
   b) Between 2 and 6 years [ ]
   c) Between 7 and 11 years [ ]
   d) Above 12 years [ ]
5. **Age of your Entity**
   a) Less than a year [ ]
   b) Between 2 and 6 years [ ]
   c) Between 7 and 11 years [ ]
   d) Above 12 years [ ]

SECTION B: INTEGRATED MANAGEMENT INFORMATION SYSTEMS AND OPERATIONAL PERFORMANCE

PART A: FINANCIAL MANAGEMENT INFORMATION SYSTEMS AND OPERATIONAL PERFORMANCE

1. Please Tick (√) indicate your extent of agreement or disagreement the statements below in regard to the effect of financial management information systems on operational performance of your entity using a 5-point Likert scale type where; 5= to a very great extent, 4= to a great extent, 3 = to a little extent, 2= not sure, 1 = not at all.

S/N	Statements	To a very great extent [5]	To a great extent [4]	To a little extent [3]	Not sure [2]	Not at all [1]
1.	My entity collects accurate financial information for decision making					
2.	My entity has accurate and reliable financial information					
3.	My entity has financial systems that provide timely information for management reports					
4.	Financial decisions made by my organization always supports inter-agency decisions					
5.	Systems of my entity provides information that help in budget preparation					
6.	The information provided helps in budget implementation					
7.	The information provided by the system facilitates accountability and transparency					
8.	System information facilitates communication and reporting of financial statements on a timely manner					
9.	System information facilitates timely audits					

2. How else does financial management information systems influence operational

performance of your entity?

PART B: PROCURMENT MANAGEMENT INFORMATION SYSTEMS AND OPERATIONAL PERFORMANCE

3. Please Tick (√) indicate your extent of agreement or disagreement the statements below in regard to the effect of procurement management information systems on operational performance of your entity using a 5-point Likert scale type where; 5= to a very great extent, 4= to a great extent, 3 = to a little extent, 2= not sure, 1 = not at all.

S/N	Statements	To a very great extent [5]	To a great extent [4]	To a little extent [3]	Not sure [2]	Not at all [1]
1.	Procurement systems provides accurate information about bidders					
2.	Bids are evaluated on a timely manner					
3.	Chances of manipulating and altering bids are minimal					
4.	Procurement managers can access multiple suppliers with the intended products and services					
5.	Violation of procurement regulations are minimized by the system					
6.	Quantity of goods required are accurately determined by the system					
7.	Inflow and outflow of goods is accurately determined by the system					
8.	Systems enhances accountability in the procurement process					
9.	Systems enhances transparency in the procurement process					

10. How else does procurement management information systems influence operational performance of your entity?

PART C: MARKETING MANAGEMENT INFORMATION SYSTEMS AND OPERATIONAL PERFORMANCE

11. Please Tick (√) indicate your extent of agreement or disagreement the statements below in regard to the effect of marketing management information systems on operational performance of your entity using a 5-point Likert scale type where; 5= to a very great extent, 4= to a great extent, 3 = to a little extent, 2= not sure, 1 = not at all.

S/N	Statements	To a very great extent [5]	To a great extent [4]	To a little extent [3]	Not sure [2]	Not at all [1]
1.	Marketing information systems facilitates analysis of customer needs and wants on a timely manner					
2.	Systems facilitates timely planning on how to satisfy customer needs and wants					
3.	Systems facilitates timely evaluation of customer satisfaction					
4.	Systems facilitates production of quality products and services based on consumer research					
5.	Systems facilitates collection of customer information though online platforms					
6.	Systems profile customer information based on specific needs					
7.	Systems information enable my organization to scan the business environment before producing goods and services					
8.	My entity relies on intelligence collected from print and electronic media to make marketing decisions					
9.	Systems upgrade always improves customer experience and organizational productivity					

12. How else does marketing management information systems influence operational performance of your entity?

PART D: HUMAN RESOURCE MANAGEMENT INFORMATION SYSTEMS AND OPERATIONAL PERFORMANCE

13. Please Tick (√) indicate your extent of agreement or disagreement the statements below in regard to the effect of human resource management information systems on operational performance of your entity using a 5-point Likert scale type where; 5= to a very great extent, 4= to a great extent, 3 = to a little extent, 2= not sure, 1 = not at all.

S/N	Statements	To a very great extent [5]	To a great extent [4]	To a little extent [3]	Not sure [2]	Not at all [1]
1.	HRM systems safeguards employee information					
2.	HRM systems enable employees to complete tasks on a timely manner					
3.	HRM systems provides timely information to workers for decision making					
4.	HRM systems facilitates processing of payroll information on a timely manner					
5.	HRM systems can monitor employee performance					
6.	HRM facilitates employee appraisal					
7.	HRM systems minimizes paperwork in the organization					
8.	HRM systems can assess employee needs and recommend appropriate trainings					
9.	HRM systems enhances communication among workers					

14. How else does human resource management information systems influence operational performance of your entity?

PART E: CHALLENGES OF INTEGRATED MANAGEMENT INFORMATION SYSTEMS AND OPERATIONAL PERFORMANCE

15. Please Tick (√) indicate your extent of agreement or disagreement the statements below in regard to challenges of integrated management information systems on operational performance of your entity using a 5-point Likert scale type where; 5= to a very great extent, 4= to a great extent, 3 = to a little extent, 2= not sure, 1 = not at all.

S/N	Statements	To a very great extent [5]	To a great extent [4]	To a little extent [3]	Not sure [2]	Not at all [1]
1.	Employees of my organization are willing to use new technologies in service delivery					
2.	My organization is always willing to train workers on new technologies					
3.	My organization allocates adequate budgets to purchase new systems to enhance customer service delivery					
4.	New workers employed are computer literate					
5.	My organization is dedicated on upgrading existing systems					
6.	Employees of my organization are given personal computers to facilitate operational efficiency					
7.	Top leadership is willing to create maximum awareness about new technologies					

	launched					

PART F: MEASUREMENT OF OPERATIONAL PERFORMANCE

16. Please Tick (√) to indicate your extent of agreement or disagreement the statements below in regard to parameters used by your entity to measure operational performance using a Likert scale type of measurement, where; 5= to a very great extent, 4= to a great extent, 3 = to a little extent, 2= not sure, 1 = not at all.

S/N	Statements	To a very great extent [5]	To a great extent [4]	To a little extent [3]	Not sure [2]	Not at all [1]
1.	Costs incurred reflects operational performance of my entity					
2.	Reliability of services to customers reflects performance					
3.	Time taken to serve customers or process claims translate to operational performance					
4.	Minimal number of complaints reflects operational performance					
5.	Employee willingness to provide quality services reflects operational performance					
6.	Ability of my entity to improve services reflects operational performance					
7.	Flexibility of my organization to adjust to changing consumer demands and implement new changes reflects operational performance					
8.	Number of employees assigned to accomplish a task reflects operation efficiency					
9.	Minimal mistakes and errors made reflects operational performance					

Appendix 3: List of State Owned Entities in the Ministry of Finance in Kenya

	Name of Corporation
1.	Kenya Accountants and Secretaries National Examinations Board (KASNEB
2.	Privatization Commission
3.	Kenya Investment Authority
4.	Insurance, Regulatory Authority
5.	Public Procurement Oversight Authority
6.	State Corporations Appeals Tribunal
7.	Capital Market Authority
8.	Deposit Protection Fund Board
9.	National Bank Of Kenya
10.	Kenya Post Office Savings Bank
11.	Consolidated Bank of Kenya
12.	Retirements Benefit Authority
13.	Kenya Reinsurance Corporation
14.	Kenya Revenue Authority
15.	Kenya Trade Network Agency
16.	Competition Authority of Kenya

Source: Kenya National Bureau of Statistics (2018)