

**OPERATIONS TECHNOLOGY ADOPTION AND SERVICE DELIVERY
AMONG MINISTRY OF TRANSPORT STATE CORPORATIONS IN KENYA**

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DECLARATION

Declaration by the Candidate

I declare this research project is my unique work and has not been submitted for assessment in any institutional body and has been completed as far as I know.

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DEDICATION

I dedicate this research project to the Almighty Allah, for the gift of life and good health.

To my beloved parents for the constant inspiration and support, thank you.

ACKNOWLEDGEMENT

I wish to communicate my appreciation to our Almighty God, for the enrichment of life and for seeing me through the end of this errand.

I wish to earnestly recognize my instructor who has guided me each progression all through this undertaking. It would not have been conceivable without his direction, support, and commitment in the composition of this proposition.

God bless you all.

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ABBREVIATIONS AND ACRONYMS

ERP	Enterprise Resource Planning
ICT	Information Communication and Technology
IT	Information Technology
KAA	Kenya Airports Authority
KCAA	Kenya Civil Aviation Authority
KFS	Kenya Ferry Services
KNSL	Kenya National Shipping Line
KPA	Kenya Ports Authority
KRC	Kenya Railways Corporation
MoT	Ministry of Transport
NTSA	National Transport & Safety Authority
SMEs	Small and Medium Enterprises
TAM	Technology Acceptance Model
TIMS	Transport Integrated Management Systems

ABSTRACT

Service delivery is an issue of much concern to organizations. Despite huge investments in information technology adoption in parastatals in the Ministry of Transport, there are still challenges experienced in service delivery and now and again technological frameworks executed without partner inclusion. For instance, it is not clear whether the automation of the services that the parastatals provide has indeed improved service delivery. It is in this regards that the current study sought to examine the adoption of operations technology on service delivery among the Ministry of Transport parastatals in Kenya. The study was guided by the following objectives; To determine the operations technologies adopted among ministry of transport state corporations in Kenya, to examine the impact of operations technology adoption on service delivery among ministry of transport state corporations in Kenya and to determine the challenges faced in the adoption of operations technology among ministry of transport state corporations in Kenya. The study was anchored on the innovation diffusion theory, technology acceptance model and the theory of technology adoption life cycle. This research adopted a cross-sectional survey research design. The target population was 9,766 employees are working across the 13 Ministry of Transport Parastatals while the sample size was 384 respondents. The study used both proportionate stratified sampling and simple random sampling techniques. The study used the questionnaire to collect data. Quantitative data was coded and analyzed using descriptive statistics as well as regression analysis. The study results are that the Ministry of Transport parastatals had adopted customer service innovations, electronic payment system and mobile service innovations. Both customer service innovations, electronic payment systems and mobile service innovations had a positive and significant effect on service delivery. There was lack of adequate management support at the parastatals, operations technology adopted experienced system failure, inadequate resources hindered the continuity of system operations, the operations technology failed to perform as expected due to unstable infrastructure, employee pushback posed a challenge at the parastatals and there was poor execution and application of the operations technology infrastructure. The study concluded that Customer service innovations, electronic payment and mobile service innovations have a positive and significant effect on service delivery. The study recommended that the management of the parastatals should make sure that they have put in place an electronic payment system that is legally compliant with the existing licenses and laws. The parastatals should ensure that there is adequate management support and the operations technology adopted should be of good quality to avert system failure. Stringent measures should be put in place to avert employee pushback and also the operations infrastructure adopted should be executed and applied as per expectations.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Operations technology has been adopted in many countries globally for betterment of the services offered in organizations and parastatals such as Ministry of Transport among others (Cummings, 2012). Operations technology adoption facilitates internal and external communication, decision making, operational cost reduction, improved service delivery, knowledge management and operational efficiency (Sirima & Pere, 2014). There is a need to invest in suitable ICT and to continuously re-examine and streamline operations by use of ICT so as to enhance service delivery (Elragal & Al-Serafi, 2011). The authors further opine that, choice of suitable operations technology depends on the advantages picked up by instituting new specialized, useful or stylish arrangements. Lack of human, monetary or basic assets (resources) needed to enhance or adjust new advancements is an impediment against adoption of operations technology in most developing countries.

Scholars have proposed various theories that link operations technology adoption and service delivery. The theories that underpinned the current study included; Diffusion of innovation theory by Rogers in 1983. The theory opines that organizations can rely on the medium of communication, hour and transformations among others in influencing spread of ideas. This study was also adopted the Technology Acceptance Model proposed by Davis (1989). It is adopted because it explains the information communication technology (ICT) framework for understanding users' espouse of advancing ICT that enhances service delivery. Technology Adoption Life Cycle (Everett, 1962) is also adopted. It is pertinent to this study as it enunciates that there are different people who fall in different groups depending on a person's level of preparedness to embrace new ICT.

The use of operations technology is a significant asset that can influence the effectiveness of services delivered in any organization. Morone (2014) noticed that information technology gives a firm the chance of a wellspring of an upper hand along these lines he included that vital administration in firms ought to react to this and coordinate innovation with their business procedure. This study was conducted among ministry of transport State Corporations in Kenya.

Operations technology adoption has revolutionized service delivery in the transport sector. Creative ways of offering services have emerged as a result of adoption of information systems (Muguku, Ouma, & Yitambe, 2010). Emergence of new innovations in the transportation sector has resulted into establishment of efficient delivery channels. O'Brien and Marakas (2006) opine that many transport companies have adopted operations technology so as to maximize customer value as well as business returns. Daft (2008) postulates that innovations in operations technology have enabled employees and their organizations make good decisions as well as offer services effectively and efficiently. Transport services that are technology enabled experience improvement in overall customer satisfaction and also realize quality service. Ngina (2013) opines that when current operations technology is blended with sound service design, organizations will realize improvement in service delivery and customer satisfaction.

1.1.1 Operations Technology Adoption

Operations technology adoption is the use of IT related infrastructure to run different activities within an organization. It also refers adoption of physical and non-physical parts of a computer to discern and make alterations as a result of keeping track of and

regulations of business activities (Burford, 2017). Operations technology adoption relates to a state where individuals handle digital tools and can utilize them to their fullest limit, the capacity to embrace computerized innovation is turning into a necessary piece of regular day-to-day existence particularly in the business world (Cummings, 2012).

According to Voinov, Jenni, Gray, Kolagani, Glynn, Bommel and Sterling (2018), operations technology adoption goes beyond simply incorporating various software tools into your tasks. It is supposed to be utilized effectively; this means making use of a wide variety of features offered by each of your software tools so that you can increase their impact on company processes. Nenova and Niang (2009) state that, adopting operations technology in organizations achieves productivity growth, and this has an evident result in businesses that have utilized operations technology. According to Ongori (2009), the selection of operations technology would change how organizations work in this time of globalization where there is dynamism in the business environment, expanding rivalry, and, changing business tasks. For example, operations technology adoption provides entities advantages such as improving customer relationships and enabling staffs to attend to customers promptly (Hough, 2012). Despite this, the profits of digital innovation reception in third world countries have missed the mark concerning the potential. Specialists have ascribed this issue to hierarchical variables, natural factors, and the absence of specialized aptitudes, among others (Ongori, 2009).

It was anticipated that adoption of operations technology influences service delivery and hence its justification as a determinant of service delivery in the current study. Besides, among the mandate of State Corporations under the Ministry of Transport is to spearhead

adoption of technology (Kobia & Mohammed, 2006), therefore it was interesting to determine operations technology adoption influences service delivery among the Ministry of Transport Parastatals. Hidalgo and Albors (2010) opine that operations technology helps to achieve the quality of service needed in the transport sector.

Operations technology considered in this study were customer service innovations; electronic payment systems and mobile service innovations. Customer service innovations are the changes that take place realistically which aid individuals in attending to clients. Electronic payment is a way of paying for goods or services electronically. The systems have been adopted in the transportation industry to facilitate collection of parking fees transit fares and highway tolls among others (Maiyo, 2013). In the transport sector mobile applications have been adopted. The sector is embracing digitalization due to a surge in mobile service innovations which have been used either in route planning, online booking, fleet management or delivery schedule optimization among others.

1.1.2 Service Delivery

As per Berry and Linoff (2004), a service is a method for conveying an incentive to clients by encouraging the result clients need to accomplish without proprietorship by the client of the particular procedure jobs and dangers. Service delivery refers to an uninterrupted, periodic procedure for offering services to clients (Kundenbindun, 2008). It is successful if it is offered on time and as per the space scales that the user needs. The services should also be dependable and reliable. Services should be delivered on time and as per user specifications. In-order for the clients to understand, the services offered should be custom designed to meet user specific formats. The services should be credible for the recipients

to confidently apply them in decision-making. User needs are always be evolving, therefore services delivered should be responsive and flexible. The quality of service delivery is assessed when a comparison is made between expectations and performance.

Service delivery consists of procedures that give the engineering on how services are rendered; it is the demonstration of offering support to clients, which the clients use since it addresses their issues (Berry & Linoff, 2004). To offer predominant and unrivalled types of assistance there is a need to integrate both media transmission and data innovation capacities (Burnes, 2004). Delivering administrations of excellence is a significant interest for providers that try to make and offer some incentive to their clients (Grönroos & Ravald, 2011). The significant objective of service delivery is consumer contentment, which incorporates client divisions and outsiders whom companies works with to convey products and ventures to the market (Ewuim, Igbokwe-Ibeto, & Nkomah, 2016). Thus, innovative selections that are progressively adaptable as far as reaction time, nature of administration and openness can result in enhanced serviced delivery.

The indicators of service delivery considered in this study were execution of service delivery charter, deployment service of delivery innovations and resolution of public complaints. In order to enhance service delivery effectiveness and adhere to the promised service standards organizations should outline and put into effect a complaints handling mechanism. World Bank (2009) postulates that for the complaints handling mechanism to be effective, the sketch and overseeing standards should be considered when execution is underway. In order to respond to complaints made by customers, a complaints handling mechanism should be put in place (Lin, 2014). Simon, Kafel, Nowicki, and Casedesus

(2015) opine that organizations have exhibited a low adherence to complaints handling process. Service delivery innovation is the procedure followed when creating a not previously used non-physical activities in an organization (Johnston & Clark, 2001). Ministry of Transport parastatals have deployed the innovations because the inventiveness revolves around ceaseless accomplishment enhancement in the organization.

1.1.3 Ministry of Transport Parastatals in Kenya

In 1978, the parastatals were established under an act of parliament (Kobia & Mohammed, 2006). Part of the mandate of the parastatals is to spearhead adoption of technology, suggest strategies that can enhance realization of good quality service delivery. The functions of these parastatals include; national roads development policy management among others. According to Omosa (2014), some of the parastatals undertake motor vehicles inspection and national transport and safety policy among others. Ministry of Transport parastatals are also involved in civil aviation management and training and protection of road reserves.

The focus of the current study was on thirteen parastatals in the Ministry of Transport in Kenya. These corporations include KCAA that regulates the aviation industry among other functions. The study also focuses on the KAA, KPA, KFS, KNSL, KRC, NTSA, NCTTCA and the LAPPSET Coordination Authority. The parastatals main purpose is to ensure realization of both social and economic goals (Omosa, 2014). In carrying out there main functions, some of the parastatals in the Ministry of Transport have adopted Management Information Systems for use on various operations in the individual departments.

1.2 Research problem

Globally, operations technology adoption is the key to competitiveness and improvement in service delivery amongst organizations in the increasingly dynamic business world. Ajit, Donker, and Patnaik (2014) argued that operations technology adoption has had a strong effect on organizations in most parts of the world including Kenya. Despite its significance, operations technology adoption by firm's in Kenya remains a challenge. This is because of, low economic capacity, inadequate resources, limited human ability, and societal norms (Al-Debei & Al-Lozi, 2012).

Operations technology adoption and service delivery is an issue of much concern to organizations. Nevertheless, service delivery amongst Ministry of Transport organizations still remains unconvincing in its adoption of operations technology (Manyika, Chui, Brown, Bughin, Dobbs, Roxburgh & Byers, 2011). Nakajje (2011) adds that many of these organizations are yet to achieve the objectives of operations technology adoption after failure of implementing new technologies since the implementation requires an enormous financial commitment by the organization.

Several scholars have carried out research both locally and internationally concerning technology adoption and its influence on service delivery. For instance, Chen (2017) carried out a study on Information technology adoption for service innovation by concentrating on monetary firms in Taiwan. The outcomes demonstrated that receiving data innovation affects administration development rehearses, which leads to the upper hand of firms. Onobrakpeya et al. (2018) did an investigation on the impact of data and correspondence innovation on service delivery in the Nigerian manufacturing industry. The

examination set up that remotely coordinating framework, overall with changes in corporate strategies and backing, can bring about decreases in movement and its related expenses. However, in his study, Onobrakpeya et al. (2018) did not elaborate on how the adoption of ICT affect the service delivery of organizations.

Locally, James (2017) conducted a study on the effect ICT on service delivery in commercial banks in Kenya. The study established that banks in Kenya have adopted the use of ICT. The study was nevertheless undertaken in banks thus creating a gap that is going to be covered by this study. Obonyo, Kambona, and Okeyo (2016) researched on integrated national transport policy and service delivery in Nairobi city county, Kenya. The research hypothesis established that the implementation of the Policy has led to an improvement in service delivery. Yator and Shale (2014) did an investigation on ICT and its role on service delivery at the ministry of interior and coordination of national government. The study revealed that innovativeness influences service delivery to a huge degree. Muriithi (2013) investigated the impact of ICT adoption on service delivery at Kenya Power and Lighting Company. The study established that investment in ICT has a significant positive influence on service delivery. Despite huge investments in information technology adoption in parastatals in the Ministry of Transport, there are still issues experienced in service delivery and now and again technological frameworks executed without partner inclusion. For instance, it is not clear whether the automation of the services that the parastatals provide has indeed enhanced service delivery.

As seen from the above, related studies that was too general and did not focus specifically on operations technology adoption and service delivery among Ministry of Transport

parastatals. Therefore, a better understanding of operations technology adoption and its contribution to the benefits of a firm and improved effectiveness on service delivery encourages investors to invest in technology assets (Scott, DeLone & Golden, 2011). Studies on operations technology adoption among ministry of transport state corporations in Kenya are insufficient. In a bid to address this knowledge gap, the following research questions were formulated. What are the operations technologies adopted among ministry of transport state corporations in Kenya? What is the impact of operations technology adoption on service delivery among Ministry of Transport state parastatals in Kenya? What are the challenges the ministry of transport state corporations face in Kenya in the adoption of operations technology?

1.3 Research objectives

The main objectives of the study was to establish the relationship between operations technology adoption and service delivery among ministry of transport state corporations in Kenya.

The specific objectives were;

- i. To determine the operations technologies adopted among ministry of transport state corporations in Kenya.
- ii. To examine the impact of operations technology adoption on service delivery among ministry of transport state corporations in Kenya.
- iii. To determine the challenges faced in the adoption of operations technology among ministry of transport state corporations in Kenya.

1.4 Value of the study

The research might be beneficial to the management of transport parastatals, by enabling them to master the need for effectiveness on service delivery, in line with the stated objectives; it will also justify the adoption of operations technology and its usefulness in transport state corporations.

This study might also add to the body of knowledge in the area of operations technology adoption and its results can contribute to improved effectiveness of production activities and the creation of high-quality products. Future specialists can utilize the business activity estimates utilized in this examination, to create formal measures to survey the enhancement for service delivery of future adopters of technologic frameworks.

The examination may additionally be advantageous to organizations in different segments of the economy that might be eager to exploit the advantages of innovation. The investigation may be gainful to specialists, academicians, and understudies seeking after the subject in that it offers significant understanding and a reason for further research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews the theoretical framework. In addition, it provides relevant literature on the impact of operations technology adoption on service delivery and the challenges encountered in the use of technology in service delivery. The chapter includes the empirical review, conceptual framework, and the summary.

2.2 Theoretical Foundation

The study used both the innovation diffusion theory, technology acceptance model and technology adoption life cycle.

2.2.1 Diffusion of innovation theory

It was founded by Rogers in 1983. The theory provides the reasons as to why, how and at what rate information that has not been used before spread through cultures. Innovation is seen as being conveyed across channels over time (Abdullai & Nyaoga, 2017). It enunciates that organizations can rely on the medium of communication, hour, transformations and social system in influencing spread of ideas. The diffusion process according to the theory comprises of five phases; persuasion, knowledge, confirmation, implementation and decision. Sharma and Mishra (2015) opine that the diffusion process results into leap froggers, laggards' late majority, early majority, early adopters and the innovators user groups.

Innovation knowledge is dispensed through channels of communication (Bradley, Duan, Elion, Van Soest-Vercammen, & Nagelvoort, 2009). The author further opines that these channels contribute to attitude development on transformation advocated for by intended

users who can end up accepting or rejecting the decision to innovate. The theory postulates that fresh technologies have had a significant effect on level of organization productivity. This can be in order that is episodic or continuous. Dobins, Cockerill and Barnsley (2001) opine that ideas that are new and are able to make operations to be run with much ease have a high chance to being adopted. The theory was adopted as it helps to provide explanation on how Ministry of Transport parastatals can rely on medium of communication, transformations and social system to spread ideas.

2.2.2 Technology Acceptance Model (TAM)

Davis initiated TAM in 1989. The model theorizes that system use, and thus system acceptance is determined by two convictions: how well a person acknowledges that using a specific program is effortless and how much an individual acknowledges that making use of a particular structure would improve service delivery. Ke, Sun and Yang (2012) narrowed down on the user characteristics and system characteristics as the external factors to the TAM model. They found out the effect of user characteristics being more significant than system characteristics on perceived usefulness. Conversely, they also found out the effect of system characteristics being more significant than user characteristics on perceived ease of use.

Wixon and Todd (2005) integrated system characteristics to TAM, identifying information quality and system quality as the external factors. Their model validates the DeLone and McLean IS success model, which identified system characteristics as the independent variables. The theory was relevant to the study since it explains the ICT framework for understanding users' adoption and use of advancing technologies mainly in

firm operations. The effect it might have on service delivery is additionally considered. Innovation highlights and framework multifaceted nature influence apparent handiness and convenience in terms of use.

2.2.3 Technology Adoption Life Cycle

It was founded by Everett in 1962 and it is an augmentation of the diffusion process that was published by Bohlen and Beal in 1957. The model opines that the process of adoption over time assumes the shape of a normal distribution. According to the model an item that is produced for the first time is utilized by developers, early adopters, early majority, late majority and Laggards or phobics respectively as shown in Figure 2.1.

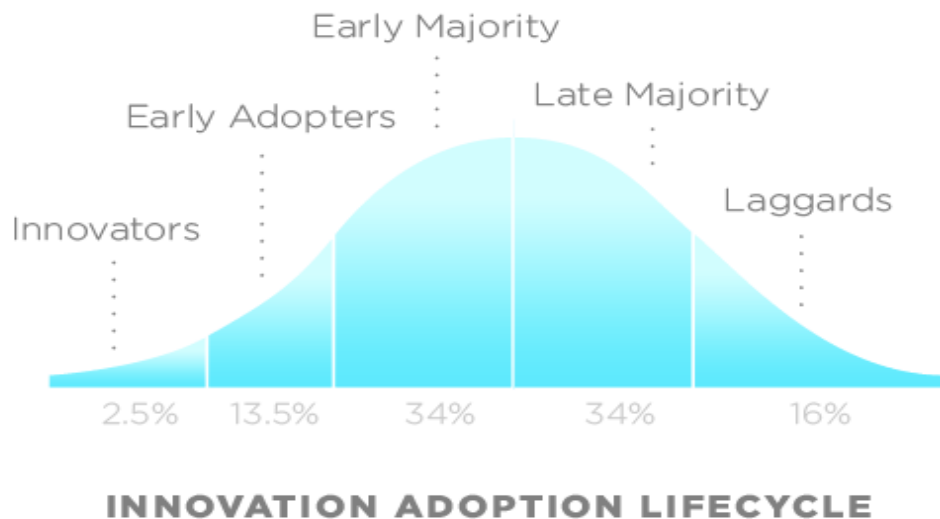


Figure 2.1: Innovation Adoption Lifecycle

In the United States, the model has been adopted to describe how innovations spread between states (Savage, 1985). It was relevant to the current study as it enunciates that different people fall in different groups depending on a person's level of preparedness to embrace new ICT.

2.3 Operations Technologies adopted among Ministry of Transport Parastatals

The creative potential of human beings depends on technological advancement (Anbalagan, 2011). Man can use his expertise to develop innovative technologies and methods of machinery that can boost the quality of goods and services. Lim and Mohammed (2012) contend that innovation is highly encouraged to address the changing needs of humanity and fulfill the need for a changing and complex business sector. In the Kenyan context, several factors are contributing towards the non-success of operations technology adoption and policy issues in organizations and still have impact on growth and competitiveness of these organizations (Deloitte, 2017). Ministry of Transport Parastatals have developed systems that allow several Ministry of Transport Parastatals services to be done online for example, Kenya National Highway Authority has adopted the ERP systems to facilitate effective execution of operations in the organization. They include supply chain management, fleet management system, audit, finance and a module for application of permits for special loads cargo (Charmonman & Mongkhonvanit, 2014). ERP system was implemented at Kenya Civil Aviation Authority (KCAA) in 2010 (Charan, Shankar & Baisya, 2013). Kenya Ports Authority has implemented the SAP Financial Supply Chain Management software, SAP Employee and Manager Self-Service software among others. As a result of its adoption, it has led to accuracy of employee data, informed decision-making, processes are completed quicker, the tendering processes are visible as well as traceability has improved.

Enterprise Resource Planning and Transport Integrated Management Systems (TIMS) are some of the operations technology adopted among Ministry of Transport Parastatals (Hanif & Sajjad, 2009). ERP modules offer constrained reconciliation of data stream inside a

specific office/portion of a firm, for example, bookkeeping and fund (Kettinger & Lee, 2012). On the other hand, TIMS is a gateway-based framework that joins all elements of enrollment, authorizing, investigation, and authorization of every vehicle and trailer on the web (Bennet, 2012), NTSA uses this system to facilitate execution of several NTSA services online. These services include the renewal of driver's licenses and vehicle registration.

2.4 Empirical Review

Shanker (2015) in his study concluded that ICT adoption by business institutions improves the efficiency as it assists in the reduction of transaction costs, defeats the limitations of separation by cutting across geographical borders in this way serving to improve administration conveyance and coordination of exercises inside authoritative limits. He notes that there is improve of quality on financial reports, like cash flow statements, income statements, and statement of affairs. Importantly, computerized frameworks permit bookkeepers to process a lot of information and produce financial data faster, less expensive, and increasingly effective.

In Ghana, Kajogbola (2014) examined the impact of IT on the Ghanaian manufacturing and services Sectors. Researcher concluded that adopting technology results in accurate calculation of data, and faster communication of financial results through E-mails, internet, intranet, and websites, while accessing financial statements and relevant analysis for quick financial decisions. Fei and Shera (2011) led an investigation on understanding medical clinic data frameworks selection in china. The examination contended that the medical

clinics are answerable for making the HIS speculations, the choices of whether and how to embrace HIS exclusively lay on the emergency clinic administrators.

An investigation by Hameed and Council (2012) on characteristics for IT adoption among firms clarified that competition improves the probability of advancement appropriation. An extreme competition pushes organizations to be creative. According to Ifinedo (2012), an inhibitor for information system adoption among small businesses is due to a limited knowledge of computer use among small business owners and inadequate knowledge on the advantages that come along with the utilization of information systems. Ssweanyana (2014) analyzed the degree of reception and use of IT in firms in Uganda. As for the commitment of ICT to the firm, the examination outlined that most of the respondents emphatically concur that ICT adoption gives expanded reserve funds, expanded effectiveness, low exchange costs, and improved help conveyance to the association that puts resources into innovation.

Dhakal and Jamil (2010) conducted an investigation of barriers to ICT usage and their impacts on the service delivery in Nepal. Majority of the respondents revealed a ton of enhancement to the extent less complex to acknowledge information in time (70%), and administration conveyance in time (52%). The assessment contemplated that improvements have been felt through the usage of ICTs; regardless, there was a tendency that there is still a lack of capacities on the use of ICT for the better conveyance of administrations.

Locally, James (2017) led an investigation to decide the degree of ICT use, the advantages of utilizing it as well as difficulties experienced in the utilization of ICT in business

banks in Kenya. The examiner reasoned that banks in Kenya have embraced the utilization of ICT. Mwai (2013) examined the effect of ICT selection on administration conveyance at Kenya Power and Lighting Company. The finding of the assessment was that ICT influences the administration conveyance. Mugeni et al. (2012) examined broadband reception determinants and contended that the overall bit of leeway of the broadband web over narrowband web was exceptionally persuasive in clarifying varieties in broadband objective. Wesongs (2009) analyzed the impacts of digital status on online taxpayer-supported organizations accessibility in Kenya. Discoveries demonstrated that critical impacts were found in a model with direct impacts of digital status on e-government through innovative availability. Gichoya (2005) did a study on the variables influencing fruitful usage of ICT in government in the experimental setting of Kenya.

2.5 Challenges faced in use of operations technology in service delivery

Organizations that have adopted operations technology have experienced success (Croft & Cochrane, 2005). Organizations face the challenge of convincing employees to accept upgrade of operation technology. The authors opine that changing employee's behavior is a long term objective. Therefore organizations need to explain to the employees the importance of the upgrade and offer the support that is needed so that the upgrade becomes successful. Acceptance of adoption or upgrade of operations technology by the employees is a bottle neck mostly encountered when the technology to be embraced is difficult to manage. Employees can develop fear informed by embracing new operations ICT because technology adoption can result into an overall over haul of the duties and responsibilities. This might result into a surge in work load, and training needs (Nandi, 2012).

The plan(s) to manage employee behavioral change adopted by top management so as can be an impediment against upgrade of operational technology (Sidawi, Alaghbandrad, Azad, Asnaashari, Preece, & Lumpur, 2012). Use of operations technology in scheduling systems and inventory control is not available in most organizations due to absence of the zeal amongst managers to computerize their organizations (Lo, Ramayah, Cyril & Run, 2010). Besides absence of zeal amongst the managers to embrace operations technology, employees lack the knowledge that is needed to adopt the technology. Upper management also does not provide the support that is needed to enhance successful transitioning and use of the technology. Most managers have negative managerial attitude towards adoption of operations technology. Some organizations lack sufficient resources that are needed in implementation or upgrade of operations technology.

Inadequate/ lack of skills necessary for technology implementation/ adoption have been termed one of the most challenges facing most organizations. Sumner (2014) explains that the absence of adequate preparation, inside skill combined with the poor blending of inward and outer mastery adds to the danger of holding Information Technology (IT) specialists. An examination is done by Manuere, Gwangwava, and Gutu (2012) posit that the absence of ICT client aptitudes and mindfulness among proprietor/administrator requires preparing, and instruction for them to address the absence of availability of associations in utilizing, and embracing their electronic business possibilities. Hence, associations require such IT specialists to prepare staff adequately. Poor preparation can likewise bring about individuals not co-working with or supporting the Information Systems (Avison & Fitzgerald, 2015).

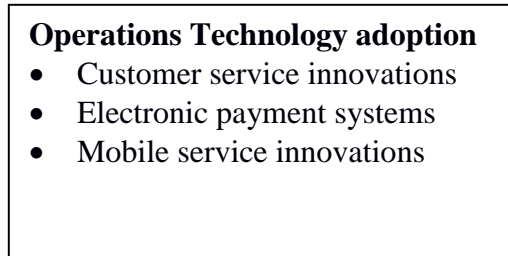
Management support is a barrier in the use of technology thus affecting service delivery. The management should possess reasonable working information on ICT. The top director's degree of IT information, joined by an ideal demeanor towards IT, expands the degree of interest in innovation (Higon, 2011). Subsequently, the supervisors have a pivotal impact inside the organizations; the shareholders/management information illiteracy on the most desirable method to the utilization of ICT innovation, but an impediment against the selection of information communication technology is digital education illiteracy. In this manner, companies develop a financial gain and, therefore the shareholders and management are intrigued on return on their stake as opposed to worrying on ICT support (Manuere, Gwangwava & Gutu, 2012).

Additionally, the implementation of technologies such as ERP and TMS is costly, this is because it is separate from programming securing, and it regularly requires modifications, as they need customization to the client's needs (Oz & Jones, 2016). Apulu, Lathama, and Moreton (2013) uncovers that in general, support and preparing costs are a portion of the issues for those who does not use the new technology, hesitance exists on frameworks overhauling, other advanced operations technology use due to dread of significant expense of reception. As indicated before, SMEs do not embrace ICT to improve exchange and backing to client administrations (Alam & Noor, 2015).

2.6 Conceptual Framework

The conceptual framework below shows the connection between the independent variable (operations technology adoption) and dependent variable (service delivery).

Independent Variable



Dependent Variable

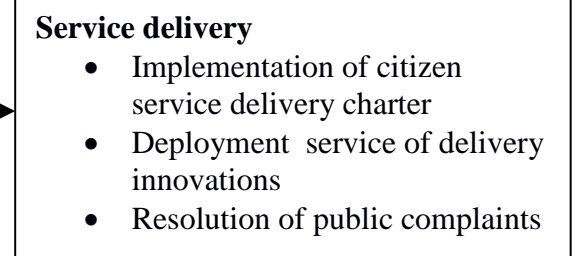


Figure 2.2: Conceptual framework

Source: Author (2019)

2.7 Gaps

Dhakal and Jamil (2010) researched on the barriers to ICT usage and their impacts on the service delivery in Nepal. Majority of the respondents revealed a ton of enhancement to the extent less complex to acknowledge information in time (70%), and administration conveyance in time (52%). Their study did not focus on the various operational technologies adopted by the organizations which the current study sought to incorporate. Mwai (2013) researched on the effect of ICT selection on administration conveyance at Kenya Power and Lighting Company. The finding of the assessment was that ICT influences the administration conveyance. The study did not focus on the various operational technologies adopted which the current study sought to determine and fill the knowledge gap.

2.8 Research Summary

The current business environment has been greatly affected by ICT adoption and its reception is across the board. ICT adoption is quickly transforming worldwide creation, work, business techniques, exchange, and utilization designs among ventures and customers. However, a gap exists on the understanding of the influence of adoption of operations technology on service delivery, particularly in developing nations. Most developed Nations fall behind as far as innovation. Also, few studies have accounted for the effect of digitization on business esteem and service delivery (Ozer, 2004). The research focused on operations technology adoption its influence on service delivery at Ministry of Transport Parastatals.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

It entails the research design, study population, sample size and design, data collection tools, and data analysis techniques.

3.2 Research Design

The study used a cross-sectional survey research design. It is used because it gives a productive and exact method for getting to data about the group of people (Oso & Onen, 2005). According to Oso and Onen (2005) and Cochran (1997), the survey is the present arranged technique used to explore an entire group of people by choosing tests to investigate and find events. A survey study gives a quantitative depiction of a group of people, with investigations and clarifications of conclusions, mentalities, and inclination of a group of individuals important to the analyst which helped in the realization of the purpose of the study which in this case was to assess operations technology adoption and service delivery among Ministry of Transport State Corporations in Kenya.

3.3 Population of Study

The number of inhabitants in the study were all the management employees working in 13 Ministry of Transport Parastatals, as indicated by the Ministry of Transport Parastatals human resource, 9,766 employees are working across the 13 Ministry of Transport Parastatals (appendix ii). Table 3.1 shows the population as per the parastatal.

Table 3.1: Target Population

Groups (Parastatals)	Target Population (Management Employees)
Kenya National Highways Authority	457
Kenya Airports Authority	1,015
Kenya Civil Aviation Authority	525
Kenya Ferry Services	821
Kenya Maritime Authority	857
Kenya National Shipping Line	653
Kenya Ports Authority	937
Kenya Railways Corporation	854
Kenya Roads Board	519
Kenya Rural Roads Authority	969
Kenya Urban Roads Authority	823
LAPSET Corridor Development Authority	615
National Transport & Safety Authority	721
Total	9766

3.4 Sample Design

A sample of 384 employees working at various Ministry of Transport parastatals were used for the study; Yamane (1967) formula was used in calculating the sample size:

$$N = \frac{N}{1 + N(e)^2} \quad n = \frac{9766}{1 + 9766 (0.05)^2} = 384 \text{ employees.}$$

The study population was stratified into groups (Parastatals). The groups considered in the study were the thirteen parastatals (appendix iii). The formula that was used to allocate the per group samples is elucidated below; $n_h = n \left(\frac{N_h}{N} \right)$ and the results were presented in Table

3.2.

Table 3.2: Sampling size

Groups (Parastatals)	Target Population (Management Employees)	Sample size	Percent (%)
Kenya National Highways Authority	457	18	4.7%
Kenya Airports Authority	1,015	40	10.4%
Kenya Civil Aviation Authority	525	21	5.5%
Kenya Ferry Services	821	32	8.3%
Kenya Maritime Authority	857	34	8.9%
Kenya National Shipping Line	653	26	6.8%
Kenya Ports Authority	937	37	9.6%
Kenya Railways Corporation	854	34	8.9%
Kenya Roads Board	519	20	5.2%
Kenya Rural Roads Authority	969	38	9.8%
Kenya Urban Roads Authority	823	32	8.3%
LAPSET Corridor Development Authority	615	24	6.3%
National Transport & Safety Authority	721	28	7.3%
Total	9766	384	100%

3.4.1 Sampling Techniques

Proportionate stratified sampling technique was utilized to sample employees from each parastatal. In proportional sampling, the group size is commensurate with the per group population. Each group had the same sampling fraction. After determining the sample size of each parastatal proportionately, the study used simple random sampling design in sampling the respondents.

3.5 Data Collection

This study involved primary data and secondary data sources in collecting data. Essential information was gathered utilizing a survey. The investigation gathered quantitative information using a self-directed survey. The survey form comprised of two sections. The initial segment asked about age, gender, level of education, and department of work, while the subsequent part contained inquiries concerning the variables of the study. The analyst conveyed the survey to the respondents. The analyst gave out the surveys to be filled in and afterward gather them later through drop and pick later

strategy. This is to guarantee the accomplishment of a decent return proportion and allow the respondents to look for an explanation on things that may demonstrate hard to answer.

Then auxiliary information was gathered from papers, distributed books, diaries, magazines, and organizational handbooks. As indicated by Cooper and Schindler (2013), optional information includes assortment and investigation of distributed material and data from different sources, for example, yearly reports, distributed information. Kombo and Tromp (2014) further clarify that auxiliary information is a helpful subjective method for assessing verifiable or contemporary classified or government records, reports, government archives, and sentiments.

3.6 Data Analysis

Raw information collected was coded and presented using figures and in tabular form. The coding involved corroborating the findings from the questionnaires. Section A was analyzed descriptively to provide frequency ranges and percentages of the results. Inferential statistics was used to analyze significant effects between variables. Study results were dispensed using tables, charts, and narrative statements.

Table 3.3: Summary

Objective	Data Collection	Data Analysis Method
Demographic information	Questionnaire, Part One	Descriptive statistics
Operations technologies adopted among MoT parastatals	Questionnaire, Part Two	Descriptive statistics
The impact of operations technology adoption on service delivery among MoT parastatals, Kenya	Questionnaire, Part Three	Regression analysis
Challenges faced in use of operations technology in Service Delivery	Questionnaire, Part Four	Descriptive statistics

Source: Researchers (2019)

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents data analysis, results and discussion on operations technology adoption and service delivery among Ministry of Transport state corporations in Kenya. The data analysis is as per the specific objectives in which the parameters were established, interpreted and inferences drawn from them. Aspects covered include response rate, background information of study respondents, descriptive findings per objectives as well as inferential analysis.

4.2 Response rate

It is the proportion of the total study respondents that filled the questionnaire out of the total study sample size expressed as a percentage (Fowler, 2014). Data was collected from all the management employees working in thirteen Ministry of Transport Parastatals. The study examined 384 management employees working in thirteen Ministry of Transport Parastatals, which include Kenya Civil Aviation Authority, Kenya ferry services, Kenya maritime authority, Kenya national shipping line and Kenya ports authority among others, where 384 questionnaires were given out to various management employees across the various Ministry of Transport Parastatals. 351 questionnaires were returned out of the 384 that were issued. It implies that 12 questionnaires were incomplete and therefore the questionnaires that were completely filled were 339, which is equivalent to 88.3%. A return rate of 50% is considered to be sufficient for further evaluation (Mugenda & Mugenda, 2003). The authors' further opine that a response rate of 60% is noble while that of 70% and above is considered to be exceptional and further analysis could be undertaken.

In the current study, the response rate was 88.3%, which implies that further analysis, and reporting could be undertaken.

4.3 Background information of the respondents

It revolves around gender, age bracket, education, ministry of transport parastatal the respondents is working at and the time spent while working at the parastatal. The results were presented below:

4.3.1 Distribution of the Respondents by Gender

The purpose of the study was to determine the distribution of the respondents according to their gender. Findings were tabulated as follows:

Table 4.1: Gender of the Respondents

Gender (n=339)	Frequency	Percent
Male	234	69.0
Female	105	31.0
Total	339	100.0

Out of the 339 respondents issued with the questionnaires in the study, 234 were male while 105 were female. This accounted for 69.0% and 31.0% respectively. Most of the management employees at the ministry of transport parastatals are of male gender. These findings reflect the fact that there is a significant gap that exists in management and leadership.

4.3.2 Distribution of the Respondents by Age

The study also sought to find out the distribution of the respondents on the basis of age bracket. Construct findings were as follows;

Table 4.2: Age of the Respondents

Age Bracket	Frequency	Percent
18-25	24	7.1
26-33	46	13.6
34-41	111	32.7
42-49	79	23.3
Any other	79	23.3
Total	339	100.0

Most of the respondents' ages ranged between 34 to 41 years which comprised of 111(32.7%), 79(23.3%) were aged between 42 to 49 years, 79(23.3%) were aged above 50 years, 46(13.6%) were aged between 26 to 33 years while 24(7.1%) were aged between 18-25 years. All the respondents were willing to disclose their ages without hesitation or any undue influence. Age is always related to experience and understanding of a given issue of interest. Respondents of different age groups usually have opinions that are not similar on a given subject of interest. This is important as it provides comprehensive data of the subject or topic of interest from all dimensions.

4.3.3 Distribution of Respondents by Level of Education

Education was operationalized using four intermediate variables. These variables include; post-graduate, under-graduate, college and a category for others. All the respondents disclosed this vital information. One's level of education provides a good picture of how one understands the topic of study. Furthermore, the education level can provide a hint or clue on how individuals are willing to contribute to the development of research knowledge on a given area. The results were captured in Table 4.3:

Table 4.3: Distribution of the Respondents by Level of Education

Highest Level of Education	Frequency	Percent
Post-Graduate	42	12.4
Under-graduate	157	46.3
College	98	28.9
Other	42	12.4
Total	339	100.0

Majority of the respondents had an under-graduate level of education. This was ascertained by 157(46.3%) of the respondents. 98(28.9%) had college level of education, 42(12.4%) had post-graduate while 42(12.4%) had professional qualifications such as certified public accountancy among others.

4.3.3 Distribution of Respondents by the Ministry of Transport Parastatal

The results of the sub-construct were presented in Table 4.4; Of the total respondents, 33(9.7%) were management employees at Kenya Rural Roads Authority, 33(9.7%) at Kenya National Shipping Line, 32(9.4%) at Kenya Airports Authority, 31(9.1%) at Kenya Ports Authority, 30(8.8%) at Kenya Civil Aviation Authority, 29(8.6%) at Kenya Railways Corporation, 28(8.3%) at Kenya Ferry Services.

Table 4.4: Ministry of Transport Parastatals

Transport Parastatal working for	Frequency	Percent
Kenya National Highways Authority	16	4.7
Kenya Airports Authority	32	9.4
Kenya Civil Aviation Authority	30	8.8
Kenya Ferry Services	28	8.3
Kenya Maritime Authority	24	7.1
Kenya National Shipping Line	33	9.7
Kenya Ports Authority	31	9.1
Kenya Railways Corporation	29	8.6
Kenya Roads Board	16	4.7
Kenya Rural Roads Authority	33	9.7
Kenya Urban Roads Authority	26	7.7
LAPSET Corridor Development Authority	18	5.3
National Transport & Safety Authority	23	6.8
Total	339	100.0

26(7.7%) were management employees at Kenya Urban Roads Authority, 24(7.1%) at Kenya Maritime Authority, 23(6.8%) at National Transport & Safety Authority, 18(5.3%) at LAPSET Corridor Development Authority, 16(4.7%) at Kenya Roads Board and

16(4.7%) at Kenya National Highways Authority. Most of the study participants were management employees at both Kenya Rural Roads Authority and Kenya National Shipping Line.

4.3.4 Distribution of Respondents by the Duration of Employment

The results were tabulated in the section that follows;

Table 4.5: Duration of Employment

Duration	Frequency	Percent
Less than one Year	28	8.3
2-5 Years	154	45.4
6-10 Years	63	18.6
Over 10 Years	94	27.7
Total	339	100.0

The study findings established that 28(8.3%) of the respondents had worked for a duration of less than one year, 154(45.4%) had worked for between 2 to 5 years, 94(27.7%) over 10 years and 63(18.6%) between 6 to 10 years. The implication of the study findings is that most participants have been working in the various Ministry of Transport Parastatals for a period of two to five years.

4.4 Operations Technology Adoption and Service Delivery

The study examined the views of respondents on operations technology adoption and service delivery among ministry of transport state corporations in Kenya. On some of the constructs the respondents were requested to indicate their views on a likert scale of 1-5, SA representing Strongly Agree, A representing Agree, N representing Neutral, D representing Disagree and SD representing Strongly Disagree. Other constructs required the respondents to provide a Yes or No answer. To establish the responses opinion on independent and dependent factors, the responses were tabulated descriptively using either

percentages, frequencies, mean or standard deviations were used to summarize the study variables.

4.4.1 Operations Technology Adopted

The first objective was to determine the operations technologies adopted among ministry of transport parastatals. Table 4.6 captures the information on the construct: Out of the total respondents, 82.0% revealed that the operations technologies adopted are customer service innovations while 18.0% opined that the operations technology adopted are not customer service innovations. Majority of the respondents revealed that the operations technologies adopted are customer service innovations. These results resemble that of Kajogbola (2014) who found that the operations technologies adopted are customer service innovations.

On whether electronic payment system had been adopted among the ministry of transport state corporations in Kenya, 94.7% revealed that it had been adopted while 5.3% postulated that the electronic payment system had not been adopted among the ministry of transport parastatals. Majority of the respondents revealed that electronic payment system had been adopted among the ministry of transport state corporations in Kenya. The results resembles that of Mugeni et al. (2012) that electronic payment system had been adopted among the ministry of transport state corporations.

Table 4.6: Operations Technologies Adopted

N= 339		Yes	No
Customer service innovations	%	82.0	18.0
Electronic Payment System	%	94.7	5.3
Mobile Service Innovations	%	94.7	5.3
Any other (specify)	%	66.7	33.3

94.7% of the total respondents enunciated that the parastatals had adopted Mobile Service Innovations while 5.3% held a contrary opinion that mobile service innovation had not been adopted. This implies that majority of the parastatals that the parastatals had adopted Mobile Service Innovations. These findings resemble the findings of Fei and Shera (2011) who opined that most the parastatals had adopted Mobile Service Innovations. Besides adoption of customer service innovations, electronic payment systems and mobile service innovations, 66.7% opined that some of the ministry of transport state corporations in Kenya had adopted operations technologies such as fleet management system among others. 33.3% opined that the parastatals had not put in place other operations technologies besides the customer service innovations, electronic payment systems and mobile service innovations adopted. This implies that some of the ministry of transport state corporations in Kenya had adopted operations technologies such as fleet management system among others. The study also examined the respondents' opinion on the following statements on operations technology adoption. The results were similar to that of Hameed and Council (2012) that ministry of transport state corporations has adopted operations technologies such as fleet management system among others. The descriptives for each technology adopted were presented in the section that follows:

4.4.1.1 Descriptive Statistics for Customer Service Innovations on Service Delivery

The study focused on whether the parastatals have effective customer service innovations, the parastatals have adopted many customer service innovations, user experience has improved as a result of adoption of customer service innovations, the customer service innovations adopted have led to provision of quick feedback to customers, customer loyalty had increased as a result of customer service innovations adoption and whether the

parastatals performance was better than that of others due to adoption of customer service innovations. The descriptive results were as shown below;

Table 4.7: Descriptive Statistics for Customer Service Innovations

N=339	S.D	D	D.K	A	S.A	Mean	Std. Deviation
	%	%	%	%	%		
Effective customer service innovations	18.0	11.8	10.3	34.5	25.4	3.3746	1.43645
Many customer service innovations	10.3	13.6	12.4	29.5	34.2	3.6372	1.34601
User experience	10.3	13.6	12.7	34.2	29.2	3.5841	1.31261
Provision of quick feedback	11.8	15.6	12.7	24.2	35.7	3.5634	1.40938
Customer loyalty	12.4	32.7	7.1	22.4	25.4	3.1563	1.42952
Competitive advantage	13.0	17.1	17.7	28.9	23.3	3.3245	1.34594
Composite values						3.4400	1.38000

The study respondents were requested to give their opinions in regards to whether the parastatals have effective customer service innovations, 59.9% of respondents agreed that the parastatals have effective customer service innovations, 29.8% disagreed with the statement. This implies that the parastatals have effective customer service innovations. Effectiveness of the customer service innovations was further established to affect service delivery among the Ministry of Transport Parastatals in Kenya with (mean= 3.3746, std. Dev. =1.43645). These findings were in tandem with the findings of Shanker (2015) who found that effective customer service innovations improve service delivery. The descriptive statistics results indicate that most of the study participants positively rated effective customer service innovations indicating that customer service innovations leads to improvement of service offered.

The study respondents were requested to give their opinions in regards to whether the parastatals have adopted many customer service innovations. Table 4.7 reveals that 63.7% agreed that the parastatals have adopted many customer service innovations, 23.9% held a contrary opinion. The implication is that the parastatals have adopted many customer service innovations. The number of the customer service innovations adopted was further established to affect service delivery among Ministry of Transport Parastatals with (mean=3.6372, std. Dev. =1.34601). These findings are similar with the findings of Fei and Shera (2011) who found out that adoption of many customer service innovations improves service delivery. The results revealed that adoption of many customer service innovations improves service delivery.

The opinions of the respondents were also sought in regards to whether user experience has improved as a result of adoption of customer service innovations. The results as per Table 4.7 indicated that 63.4% agreed with the statement that user experience has improved as a result of adoption of customer service innovations. 23.9% disagreed with the statement. This implies that user experience has improved as a result of adoption of customer service innovations. User experience was further established to affect service delivery among Ministry of Transport Parastatals with (mean=3.5841, std. Dev. =1.31261). The results are in tandem with that of Hameed and Council (2012) who found out that user experience as a result of adoption of customer service innovations improves service delivery. The descriptive statistics results indicated that most of the participants rated the statement positively indicating that user experience improves service delivery.

The study further enquired from the respondents whether the customer service innovations adopted have led to provision of quick feedback to customers. The results indicated that 61.9% agreed that the customer service innovations adopted have led to provision of quick feedback to customers. 27.4% held a contrary opinion. Majority revealed that customer service innovations adopted have led to provision of quick feedback to customers. The customer service innovations adopted led to provision of quick feedback to customers, which affected service delivery among Ministry of Transport Parastatals with (mean=3.5634, std. Dev. =1.40938). These findings resemble that of Kajogbola (2014) who examined the impact of IT on the Ghanaian manufacturing and services Sectors. The researcher found out provision of quick feedback to customers as a result of adoption of customer service innovations improves service delivery. The descriptive statistics results indicated most of the participants rated the statement positively implying that customer service innovations adopted leads to provision of quick feedback to customers, which in turn improves service delivery.

Of the total respondents 47.8% held the opinion that customer loyalty had increased as a result of customer service innovations adoption. The results as per Table 4.8 revealed that 45.1% held a contrary opinion. It implies that customer loyalty had increased as a result of customer service innovations adoption. Increase in customer loyalty as a result of adoption of customer service innovations was found to affect service delivery with (mean=3.1563, std. Dev. =1.42952). The results are in tandem with that of Ifinedo (2012), who found out that customer service innovations adoption influences customer loyalty which improves service delivery. The descriptive statistics results indicated that most of the participants

rated the statement positively indicating that increase in customer loyalty as a result of adoption of customer service innovations improves service delivery.

The respondents were asked whether the parastatals have gained competitive advantage over other players in the industry due to adoption of customer service innovations. 52.2% agreed with the statement while 30.1% disagreed with the statement. This revealed that the parastatals were better off than others due to adoption of customer service innovations. Gaining of competitive advantage by the parastatals over other players in the industry due to adoption of customer service innovations was found to affect service delivery with (mean=3.3245, std. Dev. =1.34594). The results were similar with that of Hameed and Council (2012) who found that adoption of customer service innovations improves service delivery and hence such firms perform better than others. The descriptive statistics results indicated that most of the participants rated the statement positively indicating that gaining of competitive advantage by the parastatals over other players in the industry due to adoption of customer service innovations improves service delivery.

4.4.1.2 Descriptive Statistics for Electronic Payment System on Service Delivery

The study sought the opinion of the participants on electronic payment sub-constructs among Ministry of Transport State Corporations. The sub-constructs for electronic payment system adopted in this study were in regards to whether the parastatal has an electronic payment system that is legally compliant with the existing licenses and laws, the e-payment system in place has the ability to prevent reversals that are abused in payment systems, the e-payment system in place has the ability to protect customer transaction data, mobile ticketing systems adopted have improved the customers' experience, on-board

entertainment is part of the expected customer experience and whether the e-payment services have improved audit services at the parastatal. The descriptive findings were summarized in the table below;

From the findings 55.2% opined that the parastatal has an electronic payment system that is legally compliant with the existing licenses and laws. Table 4.8 indicates that 32.4% held a contrary opinion. It meant that the parastatal has an electronic payment system that is legally compliant with the existing licenses and laws. Legally compliant electronic payment system with the existing licenses and laws was established to affect service delivery with (mean=3.3097, std. Dev. =1.39788). These findings are in tandem with the findings of Dhakal and Jamil (2010) who found out that a legally compliant electronic payment system improves service delivery. The descriptive statistics results indicated that most of the participants rated the statement positively indicating that legally compliant electronic payment system with the existing licenses and laws improves service delivery.

Table 4.8: Descriptive Statistics for Electronic Payment System

n=339	S.D	D	D.K	A	S.A	Mean	Std. Deviation
	%	%	%	%	%		
Legally compliant	15.3	17.1	12.4	31.6	23.6	3.3097	1.39788
Prevent reversals	17.1	4.7	12.4	23.0	42.8	3.6962	1.48135
Protection	12.4	10.6	6.2	31.0	39.8	3.7522	1.39439
Customers' experience	7.1	12.1	7.1	29.2	44.5	3.9204	1.27893
On-board entertainment	22.7	40.4	7.1	11.8	18.0	2.6195	1.41830
Audit services	23.3	12.4	4.7	35.7	23.9	3.2448	1.52172
Composite values						3.4238	1.41543

The study respondents were requested to give their opinions in regards to whether the e-payment system in place has the ability to prevent reversals that are abused in payment systems. In table 4.8 the results indicated that 65.8% agreed that the e-payment system in place has the ability to prevent reversals that are abused in payment systems. 21.8% of the

respondents held a contrary opinion. It meant that e-payment system in place has the ability to prevent reversals that are abused in payment systems. The ability to prevent reversals was found to affect service delivery with (mean=3.6962, std. Dev. =1.48135). The results resemble that of Mugeni et al. (2012) who found that the systems ability to prevent reversals improves service delivery. The findings of descriptive statistics indicates that majority of respondents rated the stated positively implying that the ability to prevent reversals that are abused in payment systems influences service delivery.

In regards to whether the e-payment system in place has the ability to protect customer transaction data. The results of the sub-construct were presented in Table 4.8. Out of the total respondents, 70.8% opined that the e-payment system in place has the ability to protect customer transaction data. 23.0% held a contrary opinion. It meant that the e-payment system in place has the ability to protect customer transaction data. The ability to protect customer transaction data was found to influence service delivery with (mean= 3.7522, std. Dev. =1.39439). The findings resemble the findings of Gichoya (2005) who found that the ability of the e-payment system to protect customer transaction data improves service delivery. The findings of descriptive statistics indicates that majority of respondents rated the stated positively indicating that the ability to protect customer transaction data influences service delivery.

The results from the study indicated that, 73.7% enunciated that the mobile ticketing systems adopted have improved the customers' experience. The results in Table 4.8 indicate that 19.2% disagreed with the statement. This implies that the mobile ticketing systems adopted have improved the customers' experience. The adoption of mobile

ticketing systems was found to influence service delivery with (mean= 3.9204, std. Dev. =1.27893). The findings resemble that of Wesongs (2009) who found that mobile ticketing systems improve service delivery. The findings of descriptive statistics indicates that majority of respondents rated the stated positively indicating that adoption of mobile ticketing systems improves service delivery.

The respondents were asked whether on-board entertainment is part of the expected customer experience. The results were indicated in Table 4.8. 63.1% disagreed that on-board entertainment is part of the expected customer experience. 29.8% held a contrary opinion. This implies that most participants' enunciated that on-board entertainment is not part of the expected customer experience. On-board entertainment was found to affect service delivery with (mean=2.6195, std. Dev. =1.41830). These findings are similar with findings of Ssweanyana (2014) opined that on-board entertainment improves service delivery. The descriptive statistics results indicated majority of the respondents rated the statement negatively indicating that on-board entertainment is not part of the expected customer experience.

The results from the study revealed that, 59.6% opined that the e-payment services have improved audit services at the parastatal. Table 4.8 indicates that 35.7% held a contrary opinion. This implies that e-payment services have improved audit services at the parastatal. Improvement of audit services was established to affect service delivery with (mean= 3.2448, std. Dev. = 1.52172). The results resemble that of Bennet (2012) who opined that e-payment services improve audit services. Descriptive statistics results

indicated that the statement was rated positively by many indicating that improvement of audit services improves service delivery.

4.4.1.3 Descriptive Statistics for Mobile Service Innovations on Service Delivery

Participant's opinion was sought on the following statements on adoption of mobile service innovations among Ministry of Transport State Corporations. The sub-constructs adopted include whether mobile service innovations adopted have improved service delivery, whether most transactions are done using mobile service innovations at the parastatal, whether many clients are served in a day as a result of adoption of mobile service innovations at the parastatal, also whether the respondents preferred attending to their customers using mobile service innovations, adoption of mobile service innovations has led to customer satisfaction and whether mobile service innovations have reduced delays in service delivery at the parastatal. The findings were as shown below;

On whether mobile service innovations adopted have improved service delivery, the results as per Table 4.9 indicated that 59.9% agreed with the statement that mobile service innovations adopted have improved service delivery. 30.1% disagreed with the statement. This implies that mobile service innovations adopted have improved service delivery. Mobile service innovations was further established found to affect service delivery among Ministry of Transport Parastatals with (mean=3.3982, std. Dev. =1.34477). These findings resemble the findings of Ifinedo (2012) who found out that mobile service innovation improves service delivery. The descriptive statistics results indicated a larger percentage of the participants rated the statement positively indicating that adoption of mobile service innovations improves service delivery.

Table 4.9: Descriptive statistics for Mobile Service Innovations

n=339	S.D	D	D.K	A	S.A	Mean	Std. Deviation
	%	%	%	%	%		
Improved service delivery	12.7	17.4	10.0	37.2	22.7	3.3982	1.34477
Most transactions	11.8	19.8	12.4	32.4	23.6	3.3628	1.34601
Many clients	7.1	28.9	5.3	23.9	34.8	3.5044	1.39816
Attending to our customers	23.3	15.6	18.3	11.5	31.3	3.1180	1.56447
Customer satisfaction	12.7	10.0	11.8	16.5	49.0	3.7906	1.45355
Delays	7.1	27.1	11.8	25.4	28.6	3.4130	1.33698
Composite values						3.4312	1.40732

In determining whether most transactions are done using mobile service innovations at the parastatals. 56.0% opined that most transactions are done using mobile service innovations at the parastatals. 31.6% were of a contrary opinion. It meant that most transactions are done using them at the parastatals. Use of mobile service innovations in most transactions at the parastatals was found to affect service delivery among Ministry of Transport Parastatals with (mean=3.3628, std. Dev. =1.34601). These results are in agreement Dhakal and Jamil (2010) that the use of mobile service innovations to execute transactions improves service delivery. The descriptive statistics results indicated most of the participants rated the statement positively indicating that the use of mobile service innovations in most transactions at the parastatals improves service delivery.

The results revealed that, 58.7% agreed that many clients are served in a day as a result of adoption of mobile service innovations at the parastatal. Table 4.9, further indicate that 36.0% were not of the same opinion. It meant that many clients are served in a day as a result of adoption of mobile service innovations at the parastatal. The number of clients served in a day as a result of adoption of mobile service innovations was found to affect service delivery among Ministry of Transport Parastatals with (mean=3.5044, std. Dev. =1.39816). Mugeni et al. (2012) also found that many clients are served in a day when

mobile service innovations are adopted. Descriptive statistics indicated that many rated the statement positively indicating that the number of clients served in a day as a result of adoption of mobile service innovations improves service delivery.

The study further enquired from the respondents whether the respondents preferred attending to their customers using mobile service innovations. 42.8% opined that the respondents preferred attending to their customers using mobile service innovations. 38.9% disagreed with the statement. This implies that the respondents preferred attending to their customers using mobile service innovations. Attending to customers using mobile service innovations was found to affect service delivery among Ministry of Transport Parastatals with (mean=3.1180, std. Dev. =1.56447). The results are similar to that of Gichoya (2005) who established that attending to customers using mobile service innovations improves service delivery. The descriptive statistics results indicated that a significant number of participants rated the statement positively indicating that attending to customers using mobile service innovations improves service delivery.

From the findings, 65.5% agreed that adoption of mobile service innovations has led to customer satisfaction. Table 4.9 indicates that 22.7% disagreed with the statement. This implies that adoption of mobile service innovations has led to customer satisfaction. Adoption of mobile service innovations was found to affect service delivery among Ministry of Transport Parastatals with (mean=3.7906, std. Dev. =1.45355). These findings are similar to the findings of Ssweanyana (2014) who found out that adoption of mobile service innovations has led to customer satisfaction. The descriptive statistics results

revealed that many rated the statement positively indicating that adoption of mobile service innovations improves service delivery.

On whether mobile service innovations have reduced delays in service delivery at the parastatal. Table 4.9 indicates that 54.0% agreed that mobile service innovations have reduced delays in service delivery at the parastatals. 34.2% disagreed with the statement. This implies that mobile service innovations have reduced delays in service delivery at the parastatals. Reduction in delays as a results of adoption of mobile service innovations was found to affect service delivery among Ministry of Transport Parastatals with (mean=3.4130, std. Dev. =1.33698). These findings are in tandem with the findings of Kajogbola (2014) who examined the impact of IT on the Ghanaian manufacturing and services Sectors. The researcher found out that adoption of mobile service innovations leads to reduction in delays. The findings of the descriptive statistics indicated majority of the respondents rated the statement positively indicating that reduction in delays as a result of adoption of mobile service innovations adoption of mobile service innovations improves service delivery.

4.4.2 The impact of Operations Technology adoption on Service Delivery

The study also sought to examine the impact of operations technology adoption on service delivery among ministry of transport state corporations. The study used multiple linear regression analysis to determine the effect of operations technology adoption (customer service innovations, electronic payment systems and mobile service innovations) on service delivery. Prior to establishment of the effect of operations technology adoption on

service delivery the multiple regression assumptions were tested. The assumptions results were as follows;

4.4.2.1 Testing Assumptions of Multiple Regression

The following assumptions underpin the multiple regression models. Linearity of residuals, normality of residuals, multicollinearity, auto correlation of residuals and homoscedasticity.

4.4.2.1.1 Linearity of Residuals

It was tested using the scatter plot. ZPRED was plotted on the horizontal axis while ZRESID values on the vertical axis. The linearity assumption is upheld if the scatter plot does not follow a curvilinear pattern (Lind, Marchal, & Wathen, 2012). The results as per Figure 4.1 indicate that the linearity of residuals assumption was upheld as the scatter plot did not follow a curvilinear pattern.

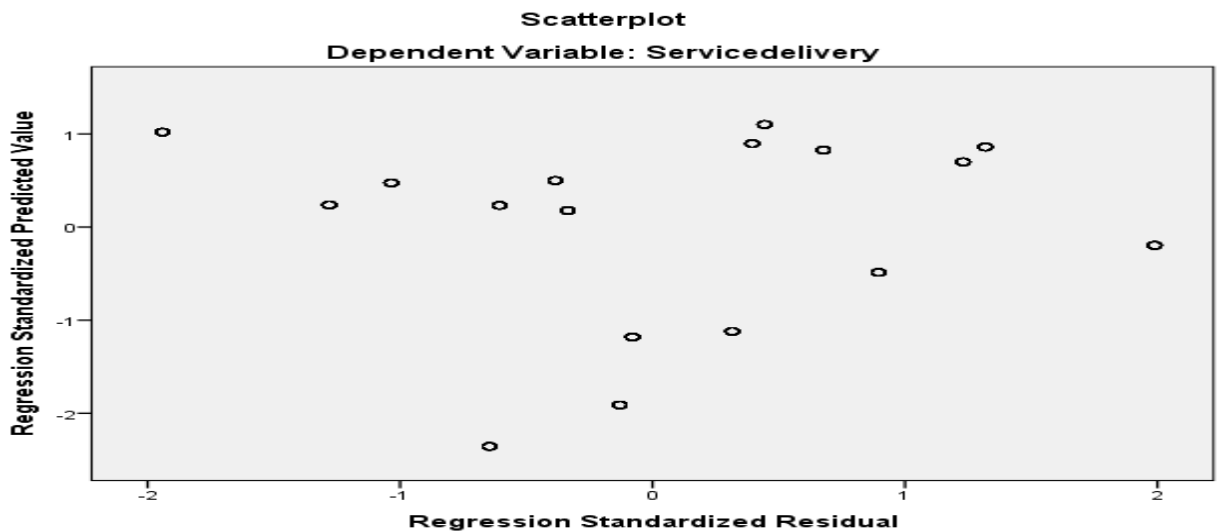


Figure 4.1: Testing of Linearity of Residuals

4.4.2.1.2 Normality Assumption Test

Kolmogorov-smirnov and Shapiro-wilk test was conducted. The former is suitable for large samples while the latter for small samples. A p - value greater than 0.05 means that the residuals are normally distributed (Lind, et al., 2012).

Table 4.10: Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Servicedelivery	.142	339	.413	.930	339	.372

a. Lilliefors Significance Correction

The p-value for Shapiro-Wilk was greater than 0.05 implying that the residuals were normally distributed.

4.4.2.1.3 Auto-correlation of Residuals Assumption Test

The Durbin-Watson's d test was done so as to test this assumption. Normally, the values of "d" lies between 0 and 4. The values of "d" should be less than less than 1.5 and not more than 2.5 (Kothari, 2004). The results were as follows;

Table 4.11: Test of Auto-correlation Assumption

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.648 ^a	.420	.414	4.48059	1.561

a. Predictors: (Constant), Mobile innovations, Electronic payment, Customer innovation

b. Dependent Variable: Service delivery

According to Saunders (2009), if the Durbin-Watson's d value obeys the rule of thumb of $1.5 < d < 2.5$, it implies that there is no auto-correlation in the data. In the current study the value of Durbin-Watson's d was 1.561 implying that there was no auto-correlation in the data.

4.4.2.1.4 Multi-collinearity Assumption Test

This assumption was verified using variance inflation factor (VIF). If it is greater than 10 then there are serious multi collinearity problems. The findings were as follows;

Table 4.12: Multi-collinearity Assumption Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
		β	Std. Error	Beta			
1	(Constant)	10.005	1.910		5.238	.000	
	Customer innovation	.775	.060	.588	12.846	.000	1.210
	Electronic payment	.130	.057	.097	2.277	.023	1.047
	Mobile innovations	.202	.065	.140	3.096	.002	1.183

a. Dependent Variable: Service delivery

The values of the variance inflation factor were less than 10 implying that there was no multi-collinearity problem.

4.4.2.1.4 Homoscedasticity Assumption Test

This assumption was verified using the scatter plot. The homoscedasticity assumption is met if the residuals do not fan out in a triangular fashion (Kothari, 2004). The results were presented in Figure 4.2;

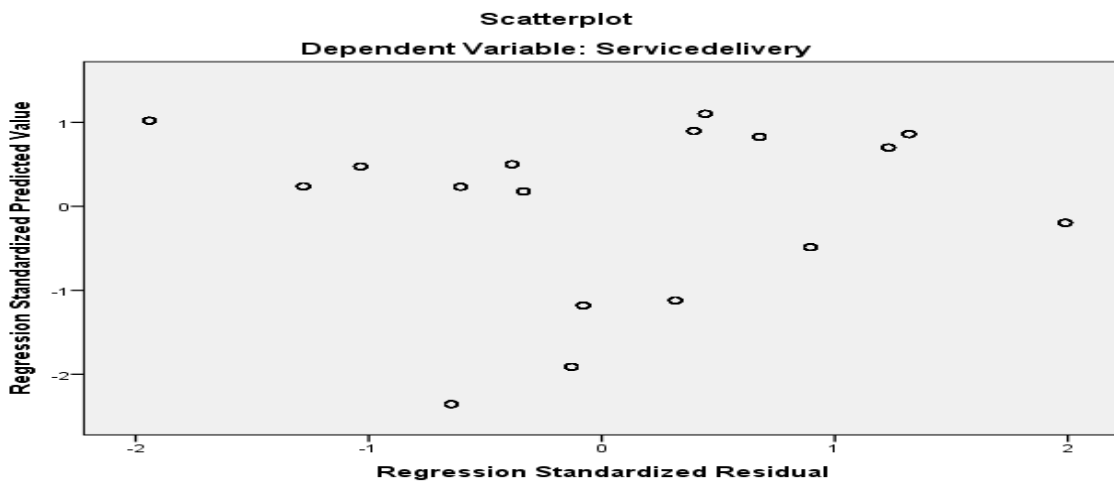


Figure 4.2: Homoscedasticity Assumption Test

The homoscedasticity assumption was as the residuals did not fan out in a triangular fashion. Since all the assumptions were upheld, further analysis was then undertaken. The results from multiple regression analysis are presented in table 4.13; 4.14 and 4.15 respectively.

Table 4.13: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.648 ^a	.420	.414	4.48059

a. Predictors: (Constant), Mobile innovations, Electronic payment, Customer innovation

The adjusted R-square was 0.414 implying that the model explains 41.4% of service delivery from the explanatory variables (i.e. customer service innovations, electronic payment systems and mobile service innovations).

4.4.2.2 Assessing the Fit of Multiple Regression Model

Analysis of variance was used to measure the differences in means between service delivery and its predictor variables. The results were presented in Table 4.14; The F-ratio was 80.729 at 3 degree of freedom which is the variable factor. This represented the effect size of the regression model and the model is significant at 95% confidence level (p=0.000) indicating that service delivery can be predicted from the aforementioned independent variables.

Table 4.14: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4862.067	3	1620.689	80.729	.000 ^b
	Residual	6725.349	335	20.076		
Total		11587.416	338			

a. Dependent Variable: Service delivery

b. Predictors: (Constant), Mobile innovations, Electronic payment, Customer innovation

4.4.2.3 Coefficient analysis

Coefficient analyses from multiple regression analysis are as shown below;

Table 4.15: Regression co-efficients

Model		Unstandardized Co-efficients		Standardized Co-efficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.005	1.910		5.238	.000
	Customer innovation	.775	.060	.588	12.846	.000
	Electronic payment	.130	.057	.097	2.277	.023
	Mobile innovations	.202	.065	.140	3.096	.002

a. Dependent variable: Service delivery

Table 4.15 shows the regression coefficients results whereby customer service innovations had a positive and significant effect on service delivery of ($\beta=0.775$, $p < 0.05$). The study results resemble the findings of Mohammed (2012) who found that customer service innovations have a positive and significant effect on service delivery. Electronic payment was also found to have a positive and significant effect on service delivery of ($\beta=0.130$, $p < 0.05$). The study findings are similar to the findings of Charmonman and Mongkhonvanit (2014) that electronic payment has a positive and significant effect on service delivery. On mobile service innovations, the study found that mobile service innovations had a positive and significant effect on service delivery of ($\beta=0.202$, $p < 0.05$). The current study results are in tandem with the findings of Kettinger and Lee (2012) that mobile service innovations have a positive and significant effect on service delivery.

4.4.3 Descriptive Statistics for challenges faced in the use of operations Technology

The second objective of the study was to determine the challenges faced in the adoption of operations technology among ministry of transport state corporations in Kenya. The respondents were therefore asked to give their opinion on whether the following challenges

are faced during the adoption of operations technology at the parastatal (s). The challenges in the adoption of operations technology at the parastatal considered in this study were; lack of adequate management, lack of skills, system failure, inadequate resources, unstable infrastructure, employee pushback and poor execution and application of the operations technology infrastructure. The descriptive results were presented in Table 4.16.

Table 4.16: Challenges faced in the adoption of operations technology

n=339	S.D	D	D.K	A	S.A	Mean	Std. Deviation
	%	%	%	%	%		
Management support	17.7	20.9	12.1	23.6	25.7	3.1858	1.46688
Lack of skills	23.3	40.4	12.4	16.8	7.1	2.4395	1.21566
System failure	12.4	6.8	6.2	47.8	26.8	2.0354	1.28438
Inadequate resources	7.1	6.2	6.8	21.2	58.7	4.1829	1.22916
Unstable infrastructure	7.1	6.2	4.7	53.7	28.3	3.8997	1.09948
Employee pushback	14.2	5.3	4.7	63.4	12.4	3.5457	1.20654
Poor execution	12.4	28.0	7.1	10.3	42.2	3.4189	1.54854
Composite values						3.2440	1.29295

The study respondents were asked whether lack of adequate management support poses a challenge at the parastatal. Table 4.16 indicates that majority of respondents 49.3% agreed that lack of adequate management support poses a challenge at the parastatal. 38.6% of the respondents disagreed with the statement. This implies that lack of adequate management support poses a challenge at the parastatal. Lack of adequate management support was further established to influence service delivery among Ministry of Transport Parastatals with (mean=3.1858, std. Dev. =1.46688). The findings are similar to the findings of Sidawi, et al. (2012) who found out that lack of adequate management support is challenge in most parastatals. The findings of descriptive statistics indicate that majority of respondents rated the statement positive indicating that lack of adequate management support affects service delivery.

From the findings, 63.7% disagreed that there is lack of skills among users at the parastatals. The results in Table 4.16 indicate that 4.11. 23.9% agreed with the statement. The implication of the results as revealed by majority of the respondents is that there is no lack of skills among users at the parastatals. Lack of skills among users was further established to influence service delivery among Ministry of Transport Parastatals with (mean=2.4395, std. Dev. =1.21566). The study findings are similar with the findings of Croft and Cochrane (2005) who found that lack of skills is an impediment against effective service delivery. The findings of descriptive statistics indicate that majority of respondents rated the statement negative implying that the users did not lack the skills at the parastatals.

The opinions of the respondents were also sought in regards to whether operations technology adopted experiences system failure. The results as per Table 4.16 indicated that 74.6% agreed with the statement that operations technology adopted experiences system failure. 19.2% disagreed with the statement. This implies that operations technology adopted experiences system failure. Experiencing of system failure was further found to affect service delivery among Ministry of Transport Parastatals with (mean=2.0354, std. Dev. =1.28438). These findings are in-tandem with findings of Sumner (2014) that system failure is a hindrance against realization of effective service delivery. The findings of the descriptive statistics indicated majority of the respondents rated the statement positively indicating that experiencing of system failure affects service delivery.

Of the total respondents, 79.9% agreed that inadequate resources hinder the continuity of system operations. Table 4.16, indicate that 13.3% disagreed with the statement. This implied that inadequate resources hinder the continuity of system operations. Resources

were further found to affect service delivery among Ministry of Transport Parastatals with (mean=4.1829, std. Dev. =1.22916). These findings are in agreement with findings of Manuere, et al. (2012) that inadequate resources are an impediment against effective service delivery. The findings of the descriptive statistics indicated majority of the respondents rated the statement positively indicating that resources affects service delivery.

The results from the study revealed that, of the total respondents 82.0% agreed that the operations technology fails to perform as expected due to unstable infrastructure. Table 4.16 indicates that 13.3% disagreed with the statement. This implies that operations technology fails to perform as expected due to unstable infrastructure. Infrastructure was found to affect service delivery among Ministry of Transport Parastatals with (mean=4.1829, std. Dev. =1.22916). These findings resemble that of Apulu, et al. (2013) that unstable infrastructure is an impediment against effective service delivery. The findings of the descriptive statistics indicated majority of the respondents rated the statement positively indicating that unstable infrastructure affects service delivery.

The respondents were asked whether employee pushback poses a challenge at the parastatal. The results of the study revealed that out of the total respondents, 75.8% agreed that employee pushback poses a challenge at the parastatals. Table 4.16, indicate that 19.5% disagreed with the statement. This implies that majority of the respondents revealed that employee pushback poses a challenge at the parastatals. Employee pushback was found to affect service delivery among Ministry of Transport Parastatals with (mean=3.5457, std. Dev. =1.20654). These findings are in line with findings of Oz and Jones (2016) that employee pushback affects service delivery. The findings of the

descriptive statistics indicated majority of the respondents rated the statement positively indicating that employee pushback affects service delivery.

Of the total respondents, 52.5% agreed that the parastatal experiences poor execution and application of the operations technology infrastructure. Table 4.16 indicates that 40.4% disagreed with statement. This implies that the parastatal experiences poor execution and application of the operations technology infrastructure. Poor execution and application of the operations technology infrastructure was found to affect service delivery among Ministry of Transport Parastatals with (mean=3.4189, std. Dev. =1.54854). These findings are in line with findings of Higon (2011) who found out that poor execution and application of the operations technology infrastructure affects service delivery. The findings of the descriptive statistics indicated majority of the respondents rated the statement positively indicating that poor execution and application of the operations technology infrastructure affects service delivery.

4.4.4 Descriptive statistics on service delivery

The study focused on service delivery among Ministry of Transport Parastatals in Kenya. The respondents were asked to provide their opinion on the following statements on service delivery at the Parastatal (s). The results were as presented in the table 4.17;

Table 4.17: Service delivery

n=339	S.D	D	D.K	A	S.A	Mean	Std. Deviation
	%	%	%	%	%		
Displays service charter	7.1	6.2	6.8	15.3	64.6	4.2419	1.24293
Sensitization	68	10.3	7.1	68.7	7.1	3.5900	1.00001
Compliance mechanisms	31.3	6.2	4.7	23.3	34.5	3.2360	1.69678
Deploy delivery innovations	10.3	25.1	6.2	18.0	40.4	3.5310	1.47807
Use service delivery innovations	7.1	16.2	6.2	47.5	23.0	3.6313	1.20269
Customers are attended to	14.2	15.9	11.8	33.9	24.2	3.3805	1.37595
Public complaints are resolved promptly	7.1	11.8	4.7	29.2	47.2	3.9764	1.27772
Public complaints are adequately dealt with	12.4	15.9	13.6	18.3	39.8	3.5723	1.45238
Extra effort	12.4	10.3	11.8	28.6	36.9	3.6726	1.38318
Composite values						3.6480	1.34552

The indicators of service delivery were whether the parastatal displays service charter prominently at the point of entry/service delivery in both English and Kiswahili, the parastatal has offered sensitization to employees in areas of service delivery, the parastatal has established compliance mechanisms by ensuring conformity with the commitments and standards in the charter, the parastatal has deployed delivery innovations, the service delivery innovations deployed are always used at the parastatal, service delivery innovations are used to make sure customers are attended to and are treated fairly, public complaints are resolved promptly, public complaints are adequately dealt with and resolved and whether extra effort is given to resolve public complaints that arises in the course duty.

The study respondents were asked to give their opinion to the statement that the parastatal displays service charter prominently at the point of entry/service delivery in both English and Kiswahili. Table 4.17 indicates that majority of the respondents 79.9% agreed to the statement that the parastatal displays service charter prominently at the point of

entry/service delivery in both English and Kiswahili. 13.2% of the respondents disagreed with the statement. This implies that the parastatal displays service charter prominently at the point of entry/service delivery in both English and Kiswahili. It was further established that display of service charter influences service delivery among Ministry of Transport Parastatals with mean (mean=4.2419, std. Dev. =1.24293). These findings are in line with findings of Elragal and Al-Serafi (2011) that displays service charter improves service delivery. The findings of the descriptive statistics indicates that majority of respondents agreed that the parastatals displayed the service charter which influenced service delivery.

Of the total respondents, 75.8% agreed that the parastatal has offered sensitization to employees in areas of service delivery. Table 4.17 indicate that 58(17.1%) disagreed with the statement. The implication of the result is that the parastatal has offered sensitization to employees in areas of service delivery. It was further established that sensitization to employees in areas of service delivery was being offered at the parastatals with mean (mean=3.5900, std. Dev. =1.00001). These findings resembles that of Berry and Linoff (2004) that sensitization to employees is a precursor of service delivery. The findings of the descriptive statistics indicates that majority of respondents rated the statement positive implying that there was sensitization to employees in areas of service delivery at the parastatals.

From the findings, 57.8% agreed that the parastatal has established compliance mechanisms by ensuring conformity with the commitments and standards in the charter. The results as per Table 4.17, indicate that 37.5% disagreed with the statement. This implies that the parastatal has established compliance mechanisms by ensuring conformity

with the commitments and standards in the charter. It was further established that compliance mechanisms had been established by ensuring conformity with the commitments and standards in the charter with mean (mean=3.2360, std. Dev. =1.69678). These findings are similar with the findings of Ewuim, et al. (2016) that conformity with the commitments and standards in the charter improves service delivery. The findings of the descriptive statistics indicates that majority of respondents rated the statement positive implying that compliance mechanisms had been established by ensuring conformity with the commitments and standards in the charter.

In determining whether the parastatals have deployed delivery innovations, 58.4% agreed that the parastatals have deployed delivery innovations. Table 4.17 indicates that 35.4% disagreed with the statement. This implies that the parastatals have deployed delivery innovations. The study further established that deployment of delivery innovations affects service delivery with mean (mean= 3.5310, std. Dev. =1.47807). These findings are similar to the findings of Burnes (2004) that most service organizations have deployed delivery innovations. The findings of the descriptive statistics indicates that majority of respondents rated the statement positive implying that deployment of delivery innovations improves service delivery.

The respondents were asked whether they always use the service delivery innovations deployed at the parastatals. Table 4.17 indicates that 70.5% agreed that they always use the service delivery innovations deployed at the parastatal. 23.3% disagreed with the statement. Majority of the respondents postulated that they always use the service delivery innovations deployed at the parastatals. The study further established that the use of the

service delivery innovations deployed at the parastatals affects service delivery with mean (mean= 3.6313, std. Dev. =1.20269). These findings are in agreement with the findings of Lin (2014) that use of service delivery innovations influences service delivery. The findings of the descriptive statistics indicates that majority of respondents rated the statement positive indicating that the use of the service delivery innovations deployed at the parastatals improves service delivery.

The results of the study revealed that 58.1% agreed that they used service delivery innovations to make sure customers are attended to and are treated fairly. Table 4.17 indicates that 30.1% disagreed with the statement. This implies that majority of the respondents had used service delivery innovations to make sure customers are attended to and are treated fairly. The study further established that the use of the service delivery innovations to attend to customers and to treat them fairly affects service delivery with mean (mean= 3.3805, std. Dev. =1.37595). These findings are in line with findings of Johnston and Clark (2001) that service delivery innovations helps to treat the customers fairly. The findings of the descriptive statistics indicates that majority of respondents rated the statement positive indicating that the parastatals are using service delivery innovations to attend to customers and to treat them fairly.

The respondents were asked whether public complaints are resolved promptly. Table 4.17 indicates that 76.4% agreed that public complaints are resolved promptly. 18.9% disagreed with the statement. This implies that public complaints are resolved promptly. It was further established that resolving public complaints promptly affects service delivery with mean (mean= 3.9764, std. Dev. = 1.27772). These findings are in agreement with the

findings of Berry and Linoff (2004) that service delivery innovations ensures that public complaints are resolved promptly. The findings of the descriptive statistics indicates that majority of respondents rated the statement positive indicating that the parastatals were resolving public complaints promptly and hence improvement of service delivery.

Out of the total respondents, 58.1% agreed that public complaints are adequately dealt with and resolved while 28.3% disagreed with the statement. This implies that majority of the respondents revealed that public complaints are adequately dealt with and resolved. The study further established that resolving public complaints adequately affects service delivery with mean (mean=3.5723, std. Dev. =1.45238). These findings disagree with the findings of Berry and Linoff (2004) that public complaints are adequately resolved. The findings of the descriptive statistics indicates that majority of respondents rated the statement positive indicating that resolving public complaints adequately influences service delivery.

The results from the study revealed that, of the total respondents, 65.5% agreed that they give extra effort to resolve public complaints that arises in the course duty. 22.7% disagreed with the statement. Majority of the respondents revealed that they give extra effort to resolve public complaints that arises in the course duty. It was further established that resolving public complaints adequately affects service delivery with mean (mean= 3.6726, std. Dev. = 1.38318). These findings are in line with findings of Kundenbindun (2008) that an extra effort to resolve public complaints is needed in order to improve service delivery. The findings of the descriptive statistics indicates that majority of

respondents rated the statement positive implying that extra effort is given to resolve public complaints that arises in the course duty which then has improved service delivery.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study was concerned with the adoption of operations technology and service delivery among ministry of transport state corporations in Kenya. The section therefore provided the summary of findings on the operations technologies adopted among ministry of transport state corporations in Kenya, the challenges faced in the adoption of operations technology among ministry of transport state corporations in Kenya and the impact of operations technology adoption on service delivery among ministry of transport state corporations in Kenya. The conclusions and recommendations are also provided.

5.2 Summary of Findings

This section presents the summary of findings on the operations technologies adopted among ministry of transport state corporations in Kenya, the challenges faced in the adoption of operations technology among ministry of transport state corporations in Kenya and the impact of operations technology adoption on service delivery among ministry of transport state corporations in Kenya.

5.2.1 Operations Technologies adopted among Ministry of Transport Parastatals

The study established that the Ministry of Transport parastatals had adopted customer service innovations, electronic payment system and mobile service innovations. In relation to customer service innovations, the study established that the parastatals have effective customer service innovations; the parastatals had adopted many customer service innovations, user experience had improved as a result of adoption of customer service innovations, the customer service innovations adopted have led to provision of quick

feedback to customers, customer loyalty had increased as a result of customer service innovations adoption and the parastatals had gained competitive advantage over other players in the industry due to adoption of customer service innovations.

In relation to electronic payment system, the study established that the parastatals had an electronic payment system that is legally compliant with the existing licenses and laws. The e-payment system in place has the ability to prevent reversals that are abused in payment systems. The e-payment system in place had the ability to protect customer transaction data. The mobile ticketing systems adopted had improved the customers' experience. On-board entertainment was not part of the expected customer experience. The e-payment services had improved audit services at the parastatals. On mobile service innovations, the study established that the mobile service innovations adopted had improved service delivery. Most transactions were done using mobile service innovations at the parastatals. Many clients were served in a day as a result of adoption of mobile service innovations at the parastatals. The respondents preferred attending to their customers using mobile service innovations. Adoption of mobile service innovations had led to customer satisfaction and the mobile service innovations had reduced delays in service delivery at the parastatals.

5.2.2 Impact of Operations Technology Adoption on Service Delivery

The study established that customer service innovations had a positive and significant effect on service delivery. It implies that customer service innovations improve service delivery. Electronic payment system was also found to have a positive and significant effect on service delivery. It implies that adoption of electronic payment system improves

service delivery. Mobile service innovations had a positive and significant effect on service delivery. It implies that Mobile service innovations improve service delivery. Customer service innovations, electronic payment systems and mobile service innovations together explained 41.4% change in service delivery among Ministry of Transport parastatals in Kenya. Operations technologies adopted improve service delivery by ensuring that public complaints are resolved promptly. They also improve service delivery as they ensure that public complaints are adequately dealt with. The operations technologies adopted also makes sure customers are attended to and are treated fairly.

5.2.3 The Challenges faced in the Adoption of Operations Technology

The study established that there was lack of adequate management support which posed a challenge at the parastatals. The operations technology adopted experienced system failure. The study also found out that inadequate resources hindered the continuity of system operations. The operations technology failed to perform as expected due to unstable infrastructure. Employee pushback posed a challenge at the parastatals. The parastatals also experienced poor execution and application of the operations technology infrastructure.

5.3 Conclusions

The study concluded that the Ministry of Transport parastatals had adopted customer service innovations, electronic payment system and mobile service innovations. The customer service innovations adopted were effective. The parastatals adopt many customer service innovations. Adoption of customer service innovations improves user experience. Adoption of the customer service innovations leads to provision of quick feedback to

customers. Adoption of customer service innovations helps parastatals gain competitive advantage over other players in the industry. The e-payment system has the ability to protect customer transaction data. The mobile ticketing system improves the customers' experience.

The e-payment services improve audit services at the parastatals. Mobile service innovations improve service delivery. Most transactions are done using mobile service innovations at the parastatals. Many clients are served in a day as a result of the adoption of mobile service innovations. The management employees prefer attending to their customers using mobile service innovations. Delays in service delivery at the parastatals have reduced due to the adoption of mobile service innovations. Customer service innovations have a positive and significant effect on service delivery. Electronic payment system has a positive and significant effect on service delivery. Mobile service innovations have a positive and significant effect on service delivery.

Lack of adequate management support has posed a challenge at the parastatals. The operations technology adopted experiences system failure. Inadequate resources hinder the continuity of system operations. The operations technology fails to perform as expected due to unstable infrastructure. Employee pushback poses a challenge at the parastatals and poor execution and application of the operations technology infrastructure is experienced at the Parastatals. Operations technologies adopted by Ministry of Transport parastatals improve service delivery as they ensure that public complaints are resolved promptly. Public complaints are adequately dealt with when operations technologies are adopted. The

operations technologies adopted makes sure customers are attended to and are treated fairly.

5.4 Recommendations

The management of the parastatals should make sure that they have put in place an electronic payment system that is legally compliant with the existing licenses and laws. The e-payment system in place should have the ability to prevent reversals that are abused in payment systems. Also, the e-payment system in place should have the ability to protect customer transaction data. On-board entertainment should be part of the expected customer experience. The parastatals should ensure that there is adequate management support. The operations technology adopted should be of good quality to avert system failure. The organizations should allocate adequate resources to facilitate the continuity of system operations. Stable infrastructure should be in place for the operations technology adopted to perform as expected. Stringent measures should be put in place to avert employee pushback. The operations infrastructure adopted should be executed and applied as per expectations.

5.5 Suggestions for further studies

The study recommends a further study to be conducted on the operations technology adoption and service delivery in other state corporations besides the Ministry of Transport Parastatals in Kenya. For example, a study on the same topic should be done on manufacturing companies in Nairobi County and/or any other County in Kenya. The operations technology considered in this study are customer service innovations; electronic payment systems and mobile service innovations. A further study should be done on the

same topic but should consider other types of operations technologies adopted besides customer service innovations; electronic payment systems and mobile service innovations and how they affect service delivery.

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APPENDICES

Appendix I: Questionnaire

I am carrying out a research on *“the relationship between operations technology adoption and service delivery among Ministry of Transport State Corporations in Kenya.”* Remember you need not add your name or initials.

Section A: Demographic Information

1. Please indicate your gender

Male ()

Female ()

2. Please tick your age bracket

18-25 years ()

26-33 years ()

34-41 years ()

42-49 years ()

Other.....

3. Kindly indicate your highest level of education

Post-Graduate ()

Under-Graduate ()

College ()

Other

4. Which ministry of transport parastatal are you working at?

Kenya National Highways Authority ()

Kenya Airports Authority ()

Kenya Civil Aviation Authority ()

Kenya Ferry Services ()

- Kenya Maritime Authority ()
- Kenya National Shipping Line ()
- Kenya Ports Authority ()
- Kenya Railways Corporation ()
- Kenya Roads Board ()
- Kenya Rural Roads Authority ()
- Kenya Urban Roads Authority ()
- LAPSET Corridor Development Authority ()
- National Transport & Safety Authority ()

5. How long have you worked at the parastatal?

- Less than one year () 2-5 years ()
- 6-10 years () Over 10 years ()

Section B: Operations Technology Adoption among Ministry of Transport State Corporations

6. Indicate whether the parastatal has adopted the following operations technologies.

Tick (√) where appropriate

	Yes	No
Customer service innovations	()	()
Electronic payment systems	()	()
Mobile service innovations	()	()
Any other (specify).....		

7. Please indicate your opinion on the following statements on operations technology adoption. Use a scale of 1-5 where 1 = strongly disagree, 2= Disagree, 3= don't know, 4= Agree, 5= strongly agree

Statements	1	2	3	4	5
The parastatal has effective customer service innovations.					
The parastatal has adopted many customer service innovations.					
User experience has improved as a result of adoption of customer service innovations.					
The customer service innovations adopted have led to provision of quick feedback to customers.					
Customer loyalty has increased as a result of customer service innovations adoption.					
The parastatal has gained competitive advantage over other players in the industry due to adoption of customer service innovations.					

8. Please indicate your opinion on the following statements on operations technology adoption among Ministry of Transport State Corporations. Use a scale of 1-5 where 1 = strongly disagree, 2= Disagree, 3= don't know, 4= Agree, 5= strongly agree.

Statements	1	2	3	4	5
The parastatal has an electronic payment system that is legally compliant with the existing licenses and laws.					
The e-payment system in place has the ability to prevent reversals that are abused in payment systems.					
The e-payment system in place has the ability to protect customer transaction data.					
Mobile ticketing systems adopted have improved the customers' experience.					
On-board entertainment is part of the expected customer experience.					
E-payment services have improved audit services at the parastatal.					

9. Please indicate your opinion on the following statements on operations technology adoption among Ministry of Transport State Corporations. Use a scale of 1-5 where 1 = strongly disagree, 2= Disagree, 3= don't know, 4= Agree, 5= strongly agree.

Statements	1	2	3	4	5
Mobile service innovations adopted have improved service delivery.					
Most transactions are done using mobile service innovations at the parastatal.					
Many clients are served in a day as a result of adoption of mobile service innovations at the parastatal.					
We prefer attending to our customers using mobile service innovations.					
Adoption of mobile service innovations has led to customer satisfaction.					
Mobile service innovations have reduced delays in service delivery at the parastatal.					

10. Has the parastatal adopted operations technology systems in all its business operations?

Yes () No ()

11. If **No**, what are the areas that require adoption of operations technology systems?

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Section C: Service Delivery

12. Please indicate your opinion on the following statements on service delivery at the Parastatal. Use a scale of 1-5 where 1 = strongly disagree, 2= Disagree, 3= don't know, 4= Agree, 5= strongly agree.

Statements	1	2	3	4	5
The parastatal displays service charter prominently at the point of entry/service delivery in both English and Kiswahili.					
The parastatal has offered sensitization to employees in areas of service delivery.					
The parastatal has established compliance mechanisms by ensuring conformity with the commitments and standards in the charter.					
The parastatal has deployed delivery innovations.					
I always use the service delivery innovations deployed at the parastatal.					
I use service delivery innovations to make sure customers are attended to and are treated fairly.					
Public complaints are resolved promptly.					
Public complaints are adequately dealt with and resolved.					
I give extra effort to resolve public complaints that arises in the course duty.					

Section D: Challenges faced in use of operations technology in service delivery

13. Please indicate your opinion on the following statements on challenges faced in the adoption of operations technology at the parastatal. Use a scale of 1-5 where 1 = strongly disagree, 2= Disagree, 3= don't know, 4= Agree, 5= strongly agree

Statements	1	2	3	4	5
Lack of adequate management support poses a challenge at the parastatal.					
There is lack of skills among users at the parastatal.					
Operations technology adopted experiences system failure.					
Inadequate resources hinder the continuity of system operations.					

The operations technology fails to perform as expected due to unstable infrastructure.					
Employee pushback poses a challenge at the parastatal.					
The parastatal experiences poor execution and application of the operations technology infrastructure.					

14. How can the challenges mentioned above be solved?

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APPENDIX II: PARASTATALS IN THE MINISTRY OF TRANSPORT

1. Kenya National Highways Authority (KENHA)
2. Kenya Airports Authority
3. Kenya Civil Aviation Authority
4. Kenya Ferry Services
5. Kenya Maritime Authority
6. Kenya National Shipping Line
7. Kenya Ports Authority
8. Kenya Railways Corporation
9. Kenya Roads Board
10. Kenya Rural Roads Authority
11. Kenya Urban Roads Authority
12. LAPSET Corridor Development Authority
13. National Transport & Safety Authority

Source: Author (2020)