# INFLUENCE OF DIGITAL TECHNOLOGIES ON CUSTOMER SERVICE DELIVERY IN HUDUMA CENTRES IN NAIROBI COUNTY, KENYA

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## DECLARATION

I declare that this research project is my original work and has not been presented to any other University or college for academic purposes.

Signed…….....……. Date……

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**Reg no: L50/76327/2014**

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

Supervisor Signed …… Date……

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## DEDICATION

This work is dedicated to my wife Ruth Muiruri Matenjwa and child Minneh Wanjiru Matenjwa. You people have been my strength during the tiring work. Thank you.

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## LIST ABBREVIATIONS AND ACRONYMS

**APA:** American Psychological Association

**CAK**: Communication Authority of Kenya

**DT:** Digital Technologies

**ICT**: Information Communication Technology

**QMS**: Que Management System

**SPSS**: Statistical Package for Social Scientist

**TAT**: Technology Acceptance Model

**UK**: United Kingdom

**WAN**: Wide Area Network

## ABSTRACT

Adoption of Digital technologies have proved very important to organizations especially in service delivery. Most government organizations have been adopting different digital technologies ranging from Social Media Communication, Telecommunication, Queuing Management System and Cashless System. The study intended to establish the Influence of adoption of digital technologies on service delivery in Huduma Centres in Nairobi county Kenya. The following research objectives guided the study: To establish the influence of Cashless system on service delivery in Huduma Centres in Nairobi county, to examine the influence of telecommunication on service delivery in Huduma Centres in Nairobi county, to assess the influence of Automated Queuing management system on service delivery in Huduma Centres in Nairobi county, to establish the influence of Social media communication on service delivery in Huduma Centres in Nairobi county and finally. The study relied on technology acceptance theory. The study adopted the descriptive survey research design. The target population was the 656 management and non-management employees of the five Huduma Centres in Nairobi County. This study adopted stratified random sampling. The research used questionnaire. To ensure the reliability and validity of the questionnaires in this study, a pre-test was undertaken during pilot study. The researcher used the 'drop and pick' method of distributing the questionnaires. The researcher then used quantitative techniques in analysing the data. Data analysis involved both descriptive and inferential statistics. The study established that cashless system and automatic queuing management system had a statistically significant positive influence on customer service delivery. However, the influence of telecommunication and social media were not statistically significant even though they were positive. The study therefore concluded that Huduma centres could enhance their customer service delivery by improving cashless system and queuing management system. The study recommends to the management of Huduma centres in Nairobi to continue enhancing the cashless system, automatic queuing management system, telecommunications system and social media to enhance customer service delivery.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

The Digital Revolution is the move from mechanical and simple electronic innovation to computerized gadgets which started around the late 1950s to the late 1970s with the reception and spread of advanced PCs and computerized keeping of records that proceeds to the present day (Schoenherr,2004, Rouse, 2014). Certainly, the term digital technologies likewise refer to the far-reaching developments realized by advanced processing and correspondence innovation amid (and after) the last 50% of the twentieth century. Like the Agricultural Revolution and Industrial Revolution, the Digital Revolution denoted the start of the Information Age (Rouse, 2014). Integral to this transformation is the large-scale manufacturing and broad utilization of advanced rationale circuits, and its determined innovations, including the PC, computerized mobile phone, and the Internet (Roy, 2014). These mechanical developments have changed conventional creation and business systems (Bojanova, 2018). The thought of the advanced unrest is a piece of the Schumpeterian hypothesis of financial development (Freeman and Louçã ,2002) which comprises of a ceaseless procedure of inventive destruction that modernizes the business as usual of society, including political, cultural, social and economic association (Rouse, 2014). The engine of this relentless power of imaginative devastation is innovative change.

The key bearer innovation of the primary Industrial Revolution (1770– 1850) depended on water-fueled motorization, the second Kondratiev wave (1850– 1900) was empowered by steam-controlled innovation, the third (1900– 1940) was portrayed by the jolt of social and beneficial association, the fourth by mechanization and the robotized assembly of society (1940– 1970), and the latest one by the digitization of social frameworks (Bojanova, 2018). Every single one of those alleged long waves has been described by a continued time of social modernization, most prominently by supported times of expanding financial efficiency. As per Carlota Perez: this quantum hop in efficiency can

be viewed as a mechanical unrest, which is shown up in the general cost structure of a specific information that we could call the 'scratch factor', satisfying the accompanying conditions: (Schoenherr,2004) plainly seen low-and dropping relative expense; (Rouse, 2014) boundless supply for every handy reason; (Roy, 2014). Potential all-inescapability; (Rouse, 2014) an ability to lessen the expenses of capital, work and items and in addition to transform them subjectively. Computerized Information and Communication Technologies satisfy those necessities and, in this manner, speak to a broadly useful innovation that can change a whole economy, prompting a cutting edge, and progressively created type of financial and political association frequently alluded to as the post-modern culture, the fifth Kondratiev, Information society, advanced age, and system society, among others (Rouse, 2014). The Industrial Revolution and Digital Revolution are presently occurring simultaneously in China and India as individuals leave the provincial regions for modern and innovative urban communities like Beijing, Shanghai, and Mumbai.

Digital development and improvement in Kenya is as of now making a change in outlook by business. Digital advancements are wrecking old methods of working and shrewd youthful new companies' visionaries are at the front line of this calm yet notable change. Groups of gifted designers and software engineers have jumped up in business incubators, accelerators and development centre points. In the meantime, the country has seen numerous spinoffs of Kenya's special enterprising unrest venture crosswise over Africa and into different corners of the world, pulling in worldwide acknowledgment for the nation (Ndemo, 2016). Advanced Kenya tends to a wide range of parts of these mechanical changes, developments and enterprising exercises, including approach definition, obstacles and openings. It is the principal book to narrative the advanced enterprise upset in Africa and portray how it has risen even with high joblessness rates, destitution, absence of mechanical framework and dissimilar social translations of entrepreneurialism and hazard taking. In this unique circumstance, the book proclaims another mindset about and understanding rising open doors in the advanced world and how best to misuse them despite critical formative difficulties (Ndemo, 2016).

We also illustrate how the shift that facilitated Kenya's digital revolution was the result of many overlapping factors. For one, India's experience and policy framework served as a benchmark and source of inspiration for growth in the face of real challenges. As in India, innovators in Kenya learned that information and communications technology (ICT) has great potential to help propel the country out of unemployment and poverty. The percentage of Kenyans in gainful employment, compared with those actively seeking employment, has been estimated at 40 percent. The World Bank reported that of the Kenyan 800,000 youth (aged 15–35) that join the labour market every year, only 50,000 secure a job. Some 70 percent of them are unemployed. But rather than view youth unemployment as the ticking time bomb it is often described as, several innovators have used the platforms created by ICT as a strategy to absorb large numbers of well-educated unemployed youth and thus to contribute to economic growth. Digital Kenya reviews the many ways this was achieved, and the challenges faced along the way (Ndemo, 2016).

In addition, the development of pro-entrepreneurialism policies and partnerships in Kenya lead to development of a simple five-point policy that became a key driver of the shift focusing on ICT infrastructural development, leveraging of universal digital platforms to develop applications, creation of local content, building of personnel capacity, evolution of public-private partnerships, and establishment of employment opportunities for the growing youth population. Result was that Kenya's policy environment has slowly become a conduit for successful ICT development. The laying of the first fibre-optic cable on the Eastern Seaboard of Africa, the TEAMS cable, was another crucial step and heralded a new chapter for cheaper telecommunication access. With it, opportunities using mainstream Internet access were created, such as subsidizing broadband for all universities and creating start-up hubs where entrepreneurs had access to high-speed Internet (Ndemo, 2016).

Soon new web applications were being created. M-Pesa, a money-transferring app, capitalized on the fact that only 5 percent of the Kenyan population had access to bank

accounts and created a solution that revolutionized citizens' financial freedom. The post-election violence of 2007–2008 also brought some unexpected innovation when a small group consisting of concerned tech entrepreneurs began to collect eyewitness reports of violence from emails and text messages and upload them to Google Maps, giving rise to Ushahidi-Swahili for testimony or witness a ground-breaking information-gathering, visualization and interactive mapping tool that is now used around the globe and was recently deployed during the U.S. elections. Ushahidi, along with M-Pesa, changed the minds of even the doubters that it was possible for innovation to stimulate world-class entrepreneurialism in Kenya (Ndemo, 2016

Digital technology is essentially the breakdown of messages, signals or forms of communication between the creating device and the receiving device (i.e. mobile phones, computers) using a string of information known as the binary code (Bojanova, 2018). Digital technology uses digital code to transmit signals and information between different devices. This can be done with things like television programs or human voices. The data is converted into strings of ones and zeros and moved quickly to the next machine, where it is converted back into media form (Ndemo, 2016). One of the most prolific uses of digital technology comes in the form of the popular cell phone market. Cellular phones utilize digital technology to transmit voices and other types of information. This type of digital technology has also been used in incremental stages along the way, such as cordless phones with good quality (schoeherr,2004)

There are many transformative digital technologies driving the business including cashless system, telecommunications, automated queuing management system, and social media communication. Cashless system is a situation where there is little or very low cash flow in each society, thus every other purchases and transactions will be made via electronic channels. Ebeiyamba (2014) pointed out that cashless economy does not refer to an outright absence of cash transactions in the economic setting but one in which the amount of cash-based transactions are kept to the barest minimum. Automated queuing management systems are designed to accurately detect the number and behavior of people in the queue. Built-in predictive algorithms can provide notice on how many

checkouts or service points will be needed to meet demand (Mutali, 2008). Social media is a series of websites and applications designed to allow people to share content quickly, efficiently and in real-time. Most people today define social media as apps on their smartphone or tablet, but the truth is, this communication tool started with computers (Hudson, 2017).

The emergence of Digital Technology has provided means for faster and better communication, efficient storage and retrieval, processing of data, exchange, and utilization of information to its users, be they individuals, groups, businesses, organizations or governments. Digital technologies must be used to create and deliver a service, which is useful and has an effective impact for the businesses and for the citizens. Digital technologies are an integral component of government operations and service delivery. Digital technologies are increasingly used as a strategic tool to more efficiently support any Government's priorities and program delivery. To have a successful e-Government, digital technology solutions, which are at the very core of the e-Government infrastructure, must be reachable by all citizens (Reffat, 2006).

Electronic Government uses a range of digital technologies, such as the Wide Area Networks (WAN), Internet, and Mobile Computing, to transform government operations to improve effectiveness, efficiency, service delivery and to promote democracy. Electronic Government is a fundamental element in the modernization of the Government of Kenya. It provides a common framework and direction across the public sector and enhances collaboration within and among public sector organizations and institutions, between Government and the business community, and between Government and the citizens that it serves in the implementation of Government Policies. It also identifies ways of developing the skills needed by public servants to realize the new opportunities offered by ICT advancement such as the internet (Welch, Hinnant & Moon, 2004).

Service delivery is a component of business that defines the interaction between providers and clients where the provider offers a service, be it information or a task, and the client either finds value or loses value as a result. Responsiveness in service delivery means that an organization will meet or exceed all agreed upon schedules and timelines If

the human resource decisions and strategies in companies are aimed at motivating and enabling employees to deliver customer-oriented promises successfully, they will move towards delivering service quality through their people (Wilson, Zeithaml, Bitner, and Gremler,2008). Every attempt will be made to over-deliver on timelines. If schedule requirements cannot be met, customers and teammates should be informed as soon as the delay is known. All affected should be updated on estimate of when actions will be completed.

Responsiveness is a key aspect of the quality of public services, reflecting the extent to which services are designed around the needs of the individual. Service organizations should set timelines and deliver according to expectations. Mainly; customers will look at the control of the situation and therefore certainty. A customer registering a complaint or engaging in a dispute wants to know when it will be resolved (Bill and David, 2011). This is a natural reaction and often the simplest to accommodate. It is not as easy as setting an expectation. There are times when customers do not understand why a process will take a certain amount of time, or times when they need it done faster than the set standard. The frontline staff need to sense surprise or concern when the duration of a process is mentioned; then they need to explain why it takes that long or, in some situations, see whether a form of prioritization is needed. It is hard to provide customers with certainty that they think they need: processes must be predictable and managed, and backlog, service levels, and expected turnaround times. From a business and consumer perspective, the issue of timeliness in the provision of public services is a principle that needs to be embraced across all industry sectors - as an obligation of the provider and a right of the customer (Baragwanath, 1996).

According to Korir (2015), the Huduma Kenya is a Government of Kenya multichannel public service delivery strategy that seeks to enhance service provision efficiency through a one stop service provision centres. Therefore, the Huduma Kenya initiative is conceptualized along the concept of integrated public service provision and with an aim of providing integrated public services hence transforming service delivery processes

(Korir, 2015). Similarly, Ng'aru and Wafula (2015) indicate that the Huduma Kenya program is an Integrated Service Delivery (ISD) strategy that aims at the delivery of Public Services through a One Stop Shop Model with great emphasis in Customer Service Excellence.

The Huduma secretariat was instituted through the Presidential Gazette Notice No.2177 of 31st March 2014 that established the governance structure of the Huduma Kenya Programme. Huduma Centres are meant to improve public service delivery in diverse ways. The "one stop approach" means that diverse services are congregated under a single roof effectively making it possible for service seekers to access it conveniently without moving from one building to another (Ng'aru & Wafula, 2015). Public service delivery was also to improve through the use of ICT technologies such as the online e-Huduma web portal to provide integrated services offered by various 3 government ministries, departments and agencies (MDAs) and a unified and integrated channel Huduma payment gateway to facilitate ease of payment for government services, through post-pay.

The Huduma Centres initiatives have been awarded diverse awards including United Nations Public Service Award by the United Nations. Others include Best Customer Service in Public Sector by the Institute of Customer Service Kenya, and Best use of Information, Communication and Technology (ICT) in public sector by the ICT Association of Kenya (Ministry of Devolution & Planning, 2015). The Government of Kenya established Huduma centres in 2013 in order to decentralize the service provision to the citizenry and improve public service delivery (Kiragu, Kariuki, & Ikua, 2015). The Huduma centres currently offer a set of 45 government services. Among these services include the provision of the identity cards, reporting of lost national identity cards, issuance of Kenya Revenue Authority personal identification numbers, and issuance of driving licenses among other functions (Ng'aru & Wafula, 2015).

The Huduma Centre serves as a one stop shop in service provision of government services. The Huduma Centre serves as one stop shop with diverse changes to be undertaken or introduced (Ng'aru & Wafula, 2015). These new aspects to be introduced

include online e-Huduma web portal to provide integrated services offered by various government ministries, departments and agencies and a unified and integrated channel Huduma payment gateway to facilitate ease of payment for government services. Other services are introduction of e-Huduma platform to offer M-Government services to citizens from their mobile phones and a Huduma call centre to provide customer service using a single dialling prefix. Through the Huduma Kenya platform, the government aims at enabling citizens to access integrated public services via their phones, computers and personal digital assistants (PDA) (Ministry of Devolution & Planning, 2015). The new portal is also expected to enhance service delivery and eradicate graft loopholes. Tenders and vacancies in the public service are also expected be accessible on the platform. Users were able to directly post their comments and complaints regarding government services.

### 1.2 Statement of the Problem

Service delivery is a continuous, cyclic process for developing and delivering user focused services. Quality service delivery involves a comparison of expectations with performance (Mutali, 2008). To be effective, services should possess these attributes like availability and timeliness at time and space scales that the user needs; Dependable and reliable in that they need to be delivered on time to the required user specification; Usable meaning that they need to be presented in user specific formats so that the clients can fully understand; Useful meaning that they need to respond appropriately. To achieve superior customer value, organizations have been adopting latest digital technologies to improve customer service. During the past few decades, improving efficiency in the service delivery in public sector has been a challenge. This is due to bureaucratic procedures marred with inefficiency, lack of accountability thus high level of corruption and wastage of resources that translate into poor economic performance and lack of skilled leaders. Many governments have however been trying to put in place measures to reverse this trend and the attitude towards governments in service delivery that comes along with it (GoK, 2012).

Several studies exist on digital technologies both globally and locally. Lu, Musalem, Olivares & Schilkrut (2013) found out that customer sensitivity to waiting is heterogeneous and negatively correlated with price sensitivity. Tavakoli, Ariff, Rahim, Zakuan, and Ismail (2014) established a positive association between customers satisfaction and electronic banking was established. Muriithi (2013) concluded that the investment in ICT has a significant positive influence on the service delivery. Mwangi & Ombuni (2015). Mwangi (2012) indicated that social media has enabled the company to work more efficiently and innovative and gain more customer satisfaction when it comes to customer service. Buss& Begorgis (2015) findings indicated due to companies limited Social Customer Relationship Management Capabilities the positive impact on Customer Relationship Performance was not achieved through Social Media Use. Furthermore, the online surveys revealed that Social Media is not the most effective Customer Relationship Management tool, nevertheless a weak relationship was found and thus Social Media can be used in addition to the companies' already established Customer Relationship Management activities.

However, even with various studies being carried out, several study gaps have been identified in the literature. Most of the studies carried tend to concentrate on one or a few aspects of digital technologies. Additionally, most studies have been carried out outside Kenya. Finally, scanty literature exist that have examined the contribution of digital technologies to service delivery at Huduma Centres in Nairobi County, Kenya. This knowledge gap needs to be filled by carrying out an empirical study. The current study therefore intended to establish the influence of digital technologies on service delivery at Huduma Centre Nairobi County Kenya.

### 1.3 Purpose of the Study

The study intended to establish the Influence of adoption of digital technologies on service delivery in Huduma Centres in Nairobi county Kenya.

### 1.4 Objectives of the Study

The study was guided by the following specific research objectives

1. To establish the influence of Cashless system on customer service delivery in Huduma Centres in Nairobi county.

2. To examine the influence of telecommunication on customer service delivery in Huduma Centres in Nairobi county.

3. To assess the influence of Automated Queuing management system on customer service delivery in Huduma Centres in Nairobi county.

4. To establish the influence of Social media communication on customer service delivery in Huduma Centres in Nairobi county.

### 1.5 Research Questions

The current study intended to answer the following questions:

1. How does Cashless system influence customer service delivery in Huduma Centres in Nairobi County?
2. How does Telecommunication influence customer service delivery in Huduma Centres in Nairobi County?
3. How does Automated Queuing management system influence customer service delivery in Huduma Centres in Nairobi County?
4. How does Social media communication influence customer service delivery in Huduma Centres in Nairobi County?

### 1.6 Significance of study

The current study is very timely and would be very useful to many groups of people in the society including the management of Huduma center Nairobi, Government parastatals and scholars and students of project management. The study would provide insight to management of Huduma Centre Nairobi County. The management would use the report of the study to examine the contribution of different digital technologies it has implemented to service delivery. The management of Huduma Centre Nairobi County would also be able to fine-tune the different digital technologies to ensure maximum customer service delivery at the Centre. The study would also be useful to ministry of

devolution in establishing and putting in place policies necessary to enable effective adoption of relevant digital technologies to improve performance of Huduma centers in Kenya in terms of service delivery. Students and scholars of project planning would also find the study findings very useful. The current study once complete would serve as literature material for future studies in implementation of digital technology projects. The study would also identify areas of further research that would be useful to students carrying out research by identifying areas they could do research on.

### 1.7 Basic Assumptions of the Study

The study was based on a few assumptions. Firstly, the study assumed that the staff at Huduma Centre are knowledgeable on the relationship between the adoption of different digital technologies and service delivery in the Huduma centers in Nairobi County. The second assumption was that the staff who would be respondents would be objective enough during the study and would provide truthful and reliable information to draw a conclusion. The study also assumed that the Huduma Centres in Nairobi County have implemented all the four digital technologies of interest to the researcher. Finally, the study assumed that the staff would cooperate fully in filling the questionnaires by giving relevant information.

### 1.8 Limitations of the Study

The researcher expects few challenges in the process of carrying out the study. Some respondents were not willing to give objective data due to fear of punishment from the top management. The study mitigated challenge by assuring the respondents that the data collected would be treated with utmost confidentiality it deserves. Another challenge faced was that some staff were busy during the time of collecting data. The researcher enlisted the assistance of the public relations officer to administer the questionnaires to the respondents who were committed during the day of the study.

### 1.9 Delimitations of the Study

The study intended to establish the effect of digital technologies on service delivery in Huduma Centres in Nairobi County. The study was limited to four digital technologies

forming the independent variables including Cashless System, telecommunication technologies, social media communication and automated queuing management system. The dependent variable was service delivery. The study was limited to five (5) Huduma Centres within Nairobi County including GPO, City square, Makadara, Eastleigh and Kibra. The study targeted 656 full-time employees working at the Huduma Centres.

### 1.10 Definitions of significant terms used in the Study

**Automated Queuing Management System** : Refers to framework intended to precisely distinguish the number and conduct of individuals in the line.

**Cashless system** : Refers to a system where there is little use of hard currency inform of notes and coins and consequently every different buys and exchanges is made through electronic channels.

**Digital Technologies** : Digital technology is essentially the breakdown of messages, signals or forms of communication between the creating device and the receiving device (i.e. mobile phones, computers) through the use of a string of information known as the binary code.

**Service Delivery** : Is a segment of business that characterizes the cooperation among suppliers and customers where the supplier offers value and the customer interacts with the value.

**Social Media Communication** : Social media is a collection of sites and applications intended to enable individuals to share content rapidly, proficiently and progressively.

**Telecommunication** : Refers to the transmission of signs, signals, messages, words, works, pictures and sounds or data of any nature by wire, radio, optical or other electromagnetic frameworks.

## 1.11 Organization of the Study

The study was organized into five chapters. The first chapter was introduction covering the background of the study, the research question, purpose of the study, research objectives, research hypotheses, significance of the study, delimitation, limitations, and assumptions of the study. The second chapter was literature review. Chapter two covered the empirical review, theoretical review, conceptual framework and study gap. Chapter three was the research methodology. The methodology covered the research design, population of the study, sampling techniques, data collection tools, data collection procedure and data analysis. Chapter Four of the study covered the data analysis and discussions. The data analysis was actualized using both descriptive and inferential statistics. The discussion followed up analysis to explain and elaborate on study findings. Chapter Five of the study covered the summary, conclusions, recommendations and areas of further research.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

The chapter discussed review of study variables, theoretical framework, conceptual framework, gaps in literature reviewed and summary of literature review.

## 2.2 Service Delivery

Study by Muriithi (2013) aimed on impact of ICT adoption on service delivery at Kenya Power and Lighting Company concluded that the investment in ICT has a significant positive influence on the service delivery. Ankra (2012) noted that clients of the banks were happy with the banks. In any case, the research established that most the clients do not visit the sites of the banks however every one of the banks had this item. Mobarek (2007) examined effect of electronic based banking on consumer loyalty establishing that electronic banking is progressively liked by more youthful people. Mwangi and Ombuni (2015) analyzed effect of Queuing Model and Queuing Behavior on Customer Satisfaction at JKUAT Students Finance Office finding that almost no customers are satisfied about the nature of waiting lines and some students have turned away at regular occasions due to the long queues.

Report on the Review of ICT governance in Queensland Government prepared by Service Delivery and Performance Commission (2006) revealed that investment in technology provides significant benefits to government organizations in terms of increased accessibility, inclusivity and flexibility in service delivery through identification of opportunities for innovation and partnering with the private sector to improve government service delivery. Paper by Buss and Begorgis (2015) on the association between the Customer Relationship management and Social Media Use with the findings indicating social media is not the most effective Customer Relationship Management tool, even though a weak relationship was found and thus Social Media can be used in addition to the companies' already established Customer Relationship Management activities.

### 2.3 Digital Technologies and Customer Service Delivery

The relationship between Digital technologies and service delivery has been examined in literature in terms of the association between different aspects of digital technologies. Major studies are presented in succeeding sub sections.

#### 2.3.1 Cashless System and Customer Service Delivery

Cashless system suggests that all payments are completed without the utilization of physical money. Cashless system includes mobile banking, online transactions, debit and credit cards, wire transfers and cheques. Ankra (2012) carried out a study in the Greater Accra with a sample size 6 banks and 360 clients. study finds that every one of the banks studied are occupied with web managing an account and had business sites. Clients of the banks are were observed to be happy with the banks. In any case, the investigation discovers that most the clients don't visit the sites of the banks however every one of the banks had this item. Woldie, Hinson, Iddrisu, and Boateng, (2008) investigated how web management of an account can enhance the connection between customers and banks in Ghana. A sample size of 180 firms was utilized in the study. The study shows that 68% of the respondent firms have known about web managing an account whiles about 33% have never known about it. 55% of the organizations demonstrate they do not use web-keeping money because of the dread of security issues associated with it.

In Nepal, Khatri and Upadhyay (2013) utilizes information from five banks and 60 of their clients to understand web-based banking. They discover that however larger part of the tested clients of the banks utilize the web banking by large and have some information about web-based banking, they had not grown totally the frame of mind to make utilization of the web-based banking to the maximum. Khatri and Upadhyay (2013) points out that the underutilization of the we based banking is a direct result of insufficient awareness and the dread of security issues associated with web-based banking. Terrible web-based banking infrastructural in the nation was additionally referred to as the real test of web-based banking. Ahmad and Al-Zu'bi (2011) ponder the reception of electronic based banking in Jordan and the effect it has on consumer loyalty,

steadfastness and positive informal. In utilizing purposive kind of sampling, they chose 179 clients from 24 business banks. The investigation finds a constructive outcome of web-based banking counts on consumer loyalty, steadfastness.

Mobarek (2007) contemplates electronic based banking and consumer loyalty. The research centres around the utilization of computerized teller machines, web and telebanking. Study demonstrates that 98% of the respondents are fulfilled and saw the utilization of the robotized teller machine to be great. Despite the fact that 88% of them don't utilize telebanking, 62% of the respondents don't see 24 telebanking as essential. 78% see web keeping money to be vital. On an entire, 72% of the respondents incline toward electronic keeping money to the manual sort of managing an account. The examination additionally discovers that electronic keeping money is progressively liked by more youthful people. Study by Tavakoli, Ariff, Rahim, Zakuan and Ismail (2014) looked at the relationship and impact of electronic based banking quality on loyalty to electronic banking in industry in Malaysia. The investigation discovers positive connection between web-based banking and fulfilment and feel of affirmation and the rate at which clients are reacted to.

Bello (2005) utilizes a few banks in Nigeria (First Bank Nigeria Plc, Zenith Bank Plc and Guaranty Trust Bank Plc) and 155 clients that keep up current record with these banks, finds the effect of electronic putting money on consumer loyalty. The examination discovers however the greater part of the respondent clients disparage electronic saving money; despite everything they belittle the going of the bank offices to have experience with the authorities. It likewise discovers that clients of electronic keeping money of the banks are not happy with the quality and effectiveness of administrations. In breaking down customers‟ dependability to banks in Ghana, explicitly the Wa Municipality, Mumin, Nkegbe and Kuunibe (2012) utilizes 130 bank clients and discover that fulfillment, bank type, separate, robotized teller machine, time to execute, switch cost, credit responsibility, different offices and assistant saving money are the huge determinants of customers‟ unwaveringness to their principle banks.

Shendge, Shelar and Kapase (2017), focused on impact and importance of cashless policy in India. According to Government of India the cashless policy would increase employment, reduce cash related robbery thereby reducing risk of carrying cash. Cashless policy would also reduce cash related corruption and attract more foreign investors to the country. In many countries introduction of cashless economy is a steps in the right direction. It is expected that its impact would be felt in modernization of payment system, Reduction in the cost of banking service, Reduction in high security and safety risk and curb banking related corruption. A major obstacle for the quick adoption of alternate mode of payment is mobile internet penetration, which is crucial because point of sale terminal works over mobile internet connection, while banks have been charging money on card-based transaction which is seen in hurdle. India has been using electronic payment system for many years now, However the retail sector still has predominance of cash transaction and payment through cash is yet to pick up card is the one of the most secure, convenient mode of cashless payment in retail market.

Paper by Asiligwa and Omwenga (2016) was done by conducting a survey study on the government of Kenya on the adoption of e-payments. A random sample of the research population was drawn from ICT and Finance employees of 262 state corporations, 19 Ministries, and 47 counties to which a questionnaire was administered to gain an understanding and information on why there had been low uptake of e-payments in the government of Kenya. The data collected was analyzed quantitatively and qualitatively using descriptive statistical techniques. The results from this analysis have been used to propose a roadmap for the adoption of e-payments. Though the major aim of Revenue Collection for most governments is to stimulate and guide the economic and social development of the country, there are several determinants for an effective realization of the exercise. As such County governments are successfully implementing E-payment to overcome the challenges of the corruption earlier experienced by the former city, municipal and county and therefore enhance optimal revenue collection.

Wahab (2012) observes that e-billing is an electronic delivery and presentation of financial statements and bills, invoices and any other related information that focuses on business to consumer billing and payment. It can also be the sending of bills and invoices by use of electronic mail or short text messages through mobile phones and payment of bills by e-mail or mobile text messages. E-billing has been widely used in many industries ranging from financial service providers to telecommunication companies and utilities. It is asserted that e-billing enables suppliers to not only generate but also to submit electronic bills rather than use the brick and mortar bills. Customers can electronically view their bills as well as advance payments.

Study by Mathew (2014) on the effects of Revenue Collection Automation and implementation challenges faced by the management at Machakos County in Kenya established that implementation of integrated revenue collection system influenced revenue collection positively. Challenges that were identified to influence implementation of integrated revenue collection system included resources, staff capacity, political interference, remoteness among others. E-payment has been designed to help individual customers and companies as well as the banks itself in eliminating or reducing some of the problems inherent in the settlement and payment process. Customers can pay their bills without having to move to the bank's premises (Wahab, 2012). They may also have access to their account information and even transfer money to other accounts in the comfort of their homes.

Study by Mathew (2014) sought to establish effects of Revenue Collection Automation and implementation challenges faced by the management at Machakos County in Kenya. The study involved a longitudinal causal study supplemented by in-depth qualitative interviews. The findings were presented line graphs and tables while explanation to the tables and figures was given in prose. Content analysis was used to analyze the primary data from the interviews. The study established that implementation of integrated revenue collection system influenced revenue collection positively. Challenges that were identified to influence implementation of integrated revenue collection system included resources, staff capacity, political interference, remoteness among others. E-payment has

been designed to help individual customers and companies as well as the banks itself in eliminating or reducing some of the problems inherent in the settlement and payment process.

### 2.3.2 Telecommunication and Customer Service Delivery

Study by Muriithi (2013) aimed at investigating the impact of ICT adoption on service delivery at Kenya Power and Lighting Company. The objectives of the study were to ascertain the level of computerization of business operation at KPLC, to establish factors that hinder full realization of value of ICT investment and to determine impact of ICT systems on services delivery at KPLC. The research design adopted in this study was descriptive survey. A population of 5400 staff was targeted on which a sample size of 400 was derived. Systematic sampling was applied to choose every 20th item hence forming a sample size in each stratum. Sample frames were lists of employees in each stratum and this was obtained from HR departments in each region. The finding of the study concluded that the investment in ICT has a significant positive influence on the service delivery.

According to the Report on the Review of ICT governance in Queensland Government prepared by Service Delivery and Performance Commission (2006), investment in technology provides significant benefits to government organizations, industries and the community at large, including: Increased accessibility, inclusivity and flexibility in service delivery – the ability for more of the customers to interact with their providers, with the flexibility of choice offered by multiple delivery channels and at more convenient times. It has also improved value for money that is, it enables quality services to be provided through lower cost delivery options, improved productivity – both of public servants and the economy and providing stimulation of the ICT industry – through identification of opportunities for innovation and partnering with the private sector to improve government service delivery.

Paper by Ssweanyana & Busler (2007) examined the extent of adoption and usage of ICT on one hundred and ten firms in Uganda with respect to the contribution of ICT to the firm. The study illustrated that most respondents strongly agree that ICT provides

increased savings, increased efficiency, improved service delivery, low transaction costs, and improved market performance to the organization that invests in IT systems. The results further revealed that the adoption and usage of ICT by firms in developing countries follow the same pattern as in developed countries, and they only differ in the level of usage and adoption because there are various factors that determines their success, for instance, high cost of hardware, software, internet and ICT professional, which inhibit governments to adopt appropriate policies to address them (Ssweanyana & Busler 2007).

A research conducted by the Wellenius & Stern (1994); undertaken in Ghana, India and South Africa revealed that demand and supply factors affect the provision of services by use of IT systems. It further reported that, expense was the main reason for respondents not using e-services in South Africa, while a perceived lack of demand for services was the least important. In contrast, it was noted that in Ghana, there was a feeling that there is no need for the e-services while local language issues were cited as the least important (Wellenius & Stern (1994). Study by Heeks (2001) found that the use of ICT can make a significant contribution to the achievement of good services. Analysing case studies from countries such as the Philippines, Honduras, Chile and South Korea, the study outlined three key contributors of e-service: improving business processes (e-marketing), connecting customers (e-customers and eservice delivery), and building external interactions (business outsourcing). Heeks (2000) also identified two major challenges that developing countries face when it comes to the successful implementation of e-service provisions. First, is the strategic challenge of e-readiness and secondly, the tactical challenge of closing design-reality gap, adopting best practice in e-service projects in order to avoid failure and to achieve success. The study also claimed that that eservices still has certain weaknesses in terms of double processes (physical and online), wrong communication and lack of options for feedback.

Dhakal & Jamil (2010); in his article E-government in developing countries: Experiences from sub-Saharan Africa addresses the different institutional and cultural contexts that must be considered when implementing ICT services in sub-Saharan Africa.

It was clear that the development potential of ICT services can only be realized if certain minimum preconditions exist in the country or if they are taken into consideration during implementation. Due to institutional conditions in Africa, longer preparations and project times (compared to developed countries) are expected when implementing ICT project. The article suggested that different administrative contexts and rationalities must be taken into an account when implementing ICT projects and strategies to ensures success. Dhakal and Jamil (2010) provided challenges of ICT use and their effects on the service delivery in Nepal. Data revealed that the majority of the respondents viewed much improvement in terms of easier to know information in time (70%); easier to make complain (59%); and service delivery in time (52%). On the other hand, more than half of the respondents confirmed that reporting of services has been in the improvement process. The study concluded that improvements have been felt through the application of ICTs; however, there was a feeling that there is still lack of skills on the use ICT for the better delivery of services.

According to Porter (2001), using the Internet in isolation reduces the chances of businesses achieving e-commerce success. Daniel (2003) who suggested Internet confirmed Porter's findings and web related technologies were being increasingly integrated into business strategies, goals and strengths in developing countries. Grimshaw et al. (2000) conferred that the extent of such integration affected the benefits to businesses. It was noted that it has increased levels of integration resulted directly in increased benefits to businesses. From 1997, a trend emerged whereby Internet-based businesses started to move away from storefronts, content websites, search engines, shopping malls and incentive-and web-presence based sites, to more sophisticated e-commerce websites and many firms started developing their own websites. However, in Africa, some businesses resisted this trend and preferred to keep their focus on more traditional methods to conduct business (Chasten & Baker, 1998). In Kenya, connectivity is now sufficient and human resource capacity to support it is plenty. The laying of the fibre optic cables opened Kenya's potential to be IT and ecommerce hub. The enacting of Kenya Communications (Amendment) Act 2008 also previously known as the ICT Bill has played a role in the creation of conducive IT environment. The law opened legal

space to promote electronic trade within Kenya and other trading partners and also provide a conducive legal environment for all players to do business and transact. It geared towards encouraging e-services and protects the privacy of the public, interests of consumers and clients from potential misuse, (Kemutai, 2009).

### 2.3.3 Queuing Management System and Customer Service Delivery

Study by Lu, Musalem, Olivares & Schilkrut (2013) conducted an empirical study to analyse how waiting in a queue in the context of a retail store affects customer-purchasing behaviour. Methodology uses a novel technology based on digital imaging to record periodic information about the queuing system. The econometric methodology integrates data with point-of-sales information to estimate the effect of queues on purchases. The study finds that waiting in queue has a non-linear effect on purchase incidence and that customers appear to primarily focus on the length of the queue rather than the actual expected wait when making their purchase decisions. Study also finds that customer sensitivity to waiting is heterogeneous and negatively correlated with price sensitivity. The study discusses implications of these results in the context of service design and category pricing.

Study by Mwangi & Ombuni (2015) Analysed effect of Queuing Model and Queuing Behaviour on Customer Satisfaction at Jkuat Students Finance Office. Using queuing theory principles and formulas the study showed that on average 22 customers arrive every hour and the service rate is 23.7 customers per hour. The system utilization factor was 92.95%, the probability of zero customers waiting 7.05; average number of customers waiting is 12.252 and average waiting time 33.415 min. The study compared the single server model against multi-server model and concluded that M/M/1 model was not the best for the Finance department. Using a questionnaire of 384 respondents, the study found out that almost no customers are satisfied about the nature of waiting lines and some students have turned away at regular occasions due to the long queues. The time students wait to be served should not be overlooked; constant check for their changing needs and improvement in the time spent when serving them has been

emphasized by the study. As a result, waiting has drawn great attention to all business operation management specialists.

Opara-Nadi (2005) carried out a study stressing the importance of queuing theory to the problem of port congestion in order to enhance sustainable development of Nigeria ports. Nigeria Ports are characterized with incessant congestion problem in the recent past and this has resulted in diversion of ships scheduled for Nigeria Ports to other neighbouring country ports which has caused the country to lose a lot of revenue. Customers want fast checkout systems and retailers are always searching for ways to improve store checkout systems. To begin the study used a pilot project with 10 shoppers. The study compared the cashier checkout and the electronic self-checkout systems. Data for the study were collected by observations of checkout processes at Wal-Mart Super Centres in the Jackson, Mississippi, area. Formulated research questions were statistically tested employing the independent samples t-tests and the chi square test for independence. Results of these analyses showed that consumers preferred the cashier checkout system to the electronic self-checkout system, although shoppers also want to learn how to use the new self-checkout technology.

Mwangi & Ombuni (2015) investigated the submittal review/approval process and used queuing theory to determine the major causes of long lead times. Under his study, he explored the underlying causes of waiting in a process flow and found the improvement methods from the queuing perspective. Joel Zhang Laifu (2000) has evaluated the performance of single-channel and Multiple channels queues using the discrete-event simulation technique. The input to the simulators is based on live data. A customer can hop to a shorter queue, but the service time needed by the customers in the queue may be longer thus resulting in an even longer waiting time.

### 2.3.4 Social Media Communication and Customer Service Delivery

Social Media are digital communication and information channels in which an active user engages in behaviours that can be consumed by others both in real time and long afterwards regardless of their location (Snopes, 2006). Study by Mwangi (2012)

investigated and establish the influence of social media on customer service at Safaricom Limited, that is, the effects it has had on the company since it was launched as a tool for customer service and also the challenges of using social media as a customer service channel. Four members of staff were interviewed; these included one contact centre manager and three online support members in the contact centre. The results indicated that social media has enabled the company to work more efficiently and innovative and gain more customer satisfaction when it comes to customer service, there has been a great increase in customer satisfaction levels and also increased number of users of the social media channels.

Kiertzman et al, (2011) contends that social media presents an enormous challenge for firms, as many established management methods are ill-suited to deal with customers who no longer want to be talked at but who want firms to listen and engage. As explained by the authors, each of the seven building blocks has important implications for how firms should engage with social media. By analysing identity, conversations, sharing, presence, relationships, reputation, and groups, firms can monitor and understand how social media activities vary in terms of their function and impact, so as to develop a congruent social media strategy based on the appropriate balance of building blocks for the clientele.

Paper by Buss and Begorgis (2015) explored the association between the Customer Relationship Orientation of a company, their Social Media Use through Social Customer Relationship Management Capabilities, with Customer Relationship Performance in order to determine if Social Media can be used as an effective Customer Relationship Management tool in a business-to-business context. Four digital managers within Swedish small and medium sized enterprises were interviewed and 34 of their corresponding customers took part in an online survey. The findings indicated due to companies limited Social Customer Relationship Management Capabilities the positive impact on Customer Relationship Performance was not achieved through Social Media Use. Furthermore, the online surveys revealed that Social Media is not the most effective Customer Relationship Management tool, nevertheless a weak relationship was found

and thus Social Media can be used in addition to the companies' already established Customer Relationship Management activities.

### 2.4 Theoretical Framework

The study relied on Technology acceptance Theory. The Technology Acceptance theory (TAT) was first proposed by Davis, Bagozzi, and Warshaw (1989) to examine the conceptual model of the intention of user or the degree to which information system or new technology has been done. TAT is designed because of usefulness that is perceived and the possible ease of use of the new technology. Usefulness of technology that is perceived refers the belief of an individual that a new technology would enhance the level of job performance via a specific new technology or information system. Perceived ease of use of new technology implies how easy an individual learns how to use or operate new technology or information system (Scott & Davis, 2015).

The TAT model has put more stress on the way perceived ease of use of new technology directly influences perceived usefulness of the technology. External variables such as environment factors surrounding an individual intervenes in influencing perceived ease of use and usefulness. Hence, Technology Acceptance Theory has a basis in both crucial perceptive factors that is perceived usefulness and perceived ease of use. Technology Acceptance Theory is applied widely on the researches involving information technology. Liu and Arnett (2000) analyzed the important variables to come up with a successful website based on TAT theory.

Study by Luarn & Lin (2003) combined Technology Acceptance Theory and rust to come up with a new integrated model that explains the behavior of consumer while interacting with technology online. Pavlou (2003) proposed an e-commerce acceptance model for online consumers by segregating and applying experimental designs and survey. Follow-up researches were carried out by Horst, Kuttschreuter and Guttering (2007). The researchers deliberated on whether the government of Netherlands ought to provide the citizens with electronic platform to access government services like other

countries do. The study adopted TAT factors including perceived risk, faith and the experiences of the public. The results of the empirical study revealed the principle of e-government based on peoples' full trust on the government firms and that citizens highly associate with IT. As a result of the empirical study, researchers found out that Technology Acceptance Theory does not merely explain how users of new technology accepts and adopts the technology but also ensures that Technology Acceptance Theory is suitable for the explaining the behavior of online user' of technology (Pavlou, 2003; Horst et al., 2007).

Technology Acceptance theory is a key theory that underpins the current study on effect if electronic relying on performance of listed banks in Kenya. It's not just enough for banks to come up with innovative technologies for banking. The technologies must be accepted and adopted by the clients of the bank. Researchers found out that Technology Acceptance Theory does not merely explain how users of new technology accepts and adopts the technology but also ensures that Technology Acceptance Theory is suitable for the explaining the behavior of online user' of technology (Pavlou, 2003; Horst et al., 2007 and Scott & Davis, 2015).

### 2.5 Conceptual Framework

The conceptual framework shows the interplay of the major variables of the study. The conceptual framework exemplifies the relationship between dependent and independent variable of the study. In this study, the independent variable is digital technologies (cashless system, telecommunication, social media communication and queuing system), the dependent variable is the customer service delivery of the company.

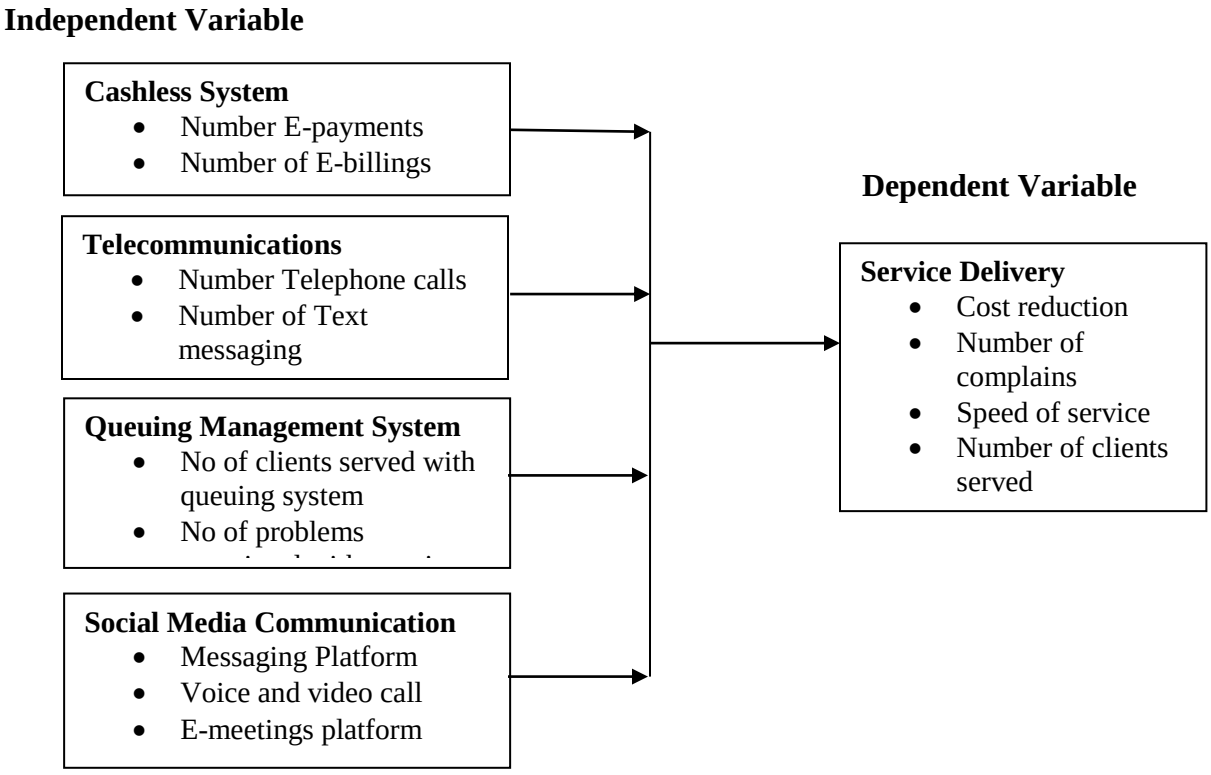


**Fig 1. 1: Conceptual Framework**

### 2.6 Explanation of Relationships of Variables in the Conceptual Framework

The independent variable is digital technologies (cashless system, telecommunication, queuing management system and social media communication), Dependent variable is service delivery.

According to Adewale (2012), Cashless system may be categorized into e-payment and e billing. E-Payments ranges from online transactions, mobile banking, debit and credit cards, cheques, and wire transfer etc. In other words, financial transactions can be carried out anywhere via the internet with the use of computers and mobile devices. Cashless system was an independent variable which the study expects to have a direct influence on service delivery in Huma centers Nairobi county, Kenya.

Telecommunications, also known as telecom, is the exchange of information over significant distances by electronic means and refers to all types of voice, data and video

transmission. This broad term includes a wide range of information transmitting technologies such as telephones, microwave communications, fibre optics, satellites, radio and television broadcasting, the internet and telegraphs. (Collins English Dictionary, 2018). The telecommunication was an independent variable measured using Telephone calls, Text messaging and Internet used at Huduma centre to improve service delivery. Telecommunication is expected to affect service delivery at Huduma centres.

Queue Management is the ability to manage and streamline queues to reduce customer waiting periods and improve staff productivity. Global Access has two innovative products, which help make this happen i.e. Intelligent Queuing and Auto-Queue systems. A queue management system is used to control queues. The queuing management was considered as a component of digital technologies implemented by Huduma centre. The variable is expected to affect service delivery at Huduma centre.

Social media are digital communication and information platforms whereby active users can engage in behaviours that can be consumed by others both in real time and long afterwards regardless of their location. Social media can be accessed by consumer's in real time; when they are developed, allowing users to share real time experiences. Memory is crucial for personalizing future interactions.

## 2.7 Gaps in Literature Reviewed

A number of studies have been carried out on different digital technologies implemented in different organizations and firms both globally and locally in Kenya. However, a number of gaps have been identified with the literature already considered as shown in table 2.1

**Table 2. 1: Summary of Knowledge Gap**

| Researcher | Study methodology | Research Findings | Focus of the study | Research Gaps |
|---|---|---|---|---|
| Ankra (2012) | Carried out a study in the Greater Accra with a sample size 6 banks and 360 clients. | Study finds that Despite the fact that a large portion of the clients don't utilize internet banking, they are happy with cutting edge innovation of the banks. | Association between e-banking and customer service in banks in Ghana | Study ignored other aspect of digital technologies like queuing management system and social media communication. |
| Woldie, Hinson, Iddrisu, and Boateng, (2008) | A sample size of 180 firms was utilized in the study. | 55% of the organizations demonstrate they do not use electronic banking because of the dread of security issues associated with it. | an investigation to look at how internet banking can enhance the connection between customers and banks in Ghana | Research ignored other aspect of digital technologies like queuing management system and social media communication. |
| Ahmad and Al-Zu'bi (2011) | In utilizing purposive kind of sampling, they chose 179 clients from 24 business banks. | The investigation finds a constructive outcome of electronic banking counts on consumer loyalty, steadfastness." | The effect of electronic banking on consumer loyalty. | Study was not done in Kenya and ignored other aspects of digital technologies. |

| | | | | |
|---|---|---|---|---|
| "Tavakoli, Ariff, Rahim, Zakuan, and Ismail (2014) | study used 384 customers in Tehran | A positive association between customers' satisfaction and electronic banking was established. | Relationship between electronic based banking and customer satisfaction in Tehran banks. | Study only focused on cashless system ignoring other aspects of digital technologies. |
| Asiligwa and Omwenga (2016) | A random sample of the research population was drawn from ICT and Finance employees of 262 state corporations, 19 Ministries, and 47 counties. The data collected was analyzed quantitatively and qualitatively using descriptive statistical techniques. | E-payment to overcome the challenges of the corruption earlier experienced by the former city, municipal and county and therefore enhance optimal revenue collection. | Survey on the government of Kenya on the adoption of e-payments. | Study ignored other aspects of digital technologies.<br><br>study did not relate cashless system to customer satisfaction. |
| Study by Muriithi (2013) | Adopted descriptive survey. A population of 5400 staff was targeted on which a sample size of 400 was derived. Systematic sampling was applied. Questionnaire was the primary data collection instrument for this study. Frequency | The finding of the study concluded that the investment in ICT has a significant positive influence on the service delivery. | Investigating the impact of ICT adoption on service delivery at Kenya Power and Lighting Company. | Study looked at ICT in general and did not focus on the digital technologies of interest to the researcher. |

| | | | | |
|---|---|---|---|---|
| | distribution tables and charts were used to present the results. | | | |
| Dhakal & Jamil (2010); | Study employed descriptive statistics. The was employed SPSS for data analysis. | The study concluded that improvements have been felt through the application of ICTs; however, there was a feeling that there is still lack of skills on the use ICT for the better delivery of services. | E-government in developing countries: Experiences from sub-Saharan Africa. | Study was not based in Kenya and Huduma centers. Study did not directly relate digital technologies to customer service. |
| Study by Lu, Musalem, Olivares & Schilkrut (2013) | The econometric methodology integrates data with point-of-sales information to estimate the effect of queues on purchases. | The study finds that waiting in queue has a non-linear effect on purchase incidence and that customers appear to primarily focus on the length of the queue rather than the actual expected wait when making their purchase decisions. | An empirical study to analyze how waiting in a queue in the context of a retail store affects customer-purchasing behavior. | Study was not based in Kenya and Huduma centers. |
| Study by Mwangi & Ombuni (2015) | The study compared the single server model against multi-server model and concluded that M/M/1 model was not the best for the Finance department. Using a questionnaire of 384 respondents. | The study found out that almost no customers are satisfied about the nature of waiting lines and some students have turned away at regular occasions due to the long queues. | Effect of Queuing Model and Queuing Behavior on Customer Satisfaction at JKUAT Students Finance Office. | Study related queuing to customer satisfaction rather than service delivery.<br><br>Study was not based in Huduma centers in Kenya. |

| | | | | |
|---|---|---|---|---|
| Opara-Nadi (2005) | Data analyzed using SPSS 12.0 Six (6) hypotheses were tested and analyzed using independent samples t-tests." 90 customers were selected from each of the two | Consumers preferred the cashier checkout system to the electronic self-checkout system, although shoppers also want to learn how to use the new self-checkout technology. | Association between check out system to customer satisfaction. | Study ignored other aspects of digital technologies like cashless system and social media communication. |
| Study by Mwangi (2012) | The methodology used to collect data in this study was the case study. Four members of staff were interviewed. | Social media has enabled the company to work more efficiently and innovative and gain more customer satisfaction when it comes to customer service. | Establish the influence of social media on customer service at Safaricom Limited. | The study was not based at Huduma centers. Study ignored other aspects of digital technologies like cashless system and que management system. |
| Buss& Begorgis (2015) | Four digital managers within Swedish small and medium sized enterprises were interviewed and 34 of their corresponding customers took part in online survey. | Social Media is not the most effective Customer Relationship Management. | Association between Social Media Use through Social Customer Relationship Management Capabilities, with Customer Relationship Performance. | The study ignored other aspects of digital technologies and was not based at Huduma centres in Nairobi Kenya. |

## 2.8 Summary of Literature Review

The chapter has discussed theoretical review, review of study variables, conceptual framework, empirical review, critical review and research gaps. Theoretical Framework has reviewed technology acceptance theory. Technology Acceptance Theory explain the conceptual model that users' intention or acceptance degree towards information system or new technology. Empirical studies section analyses previous studies by scholars on digital technologies and customer service delivery. The empirical review has been organized according to study objectives. A cashless system, according to Adewale (2012), illustrates a gradual or a radical movement of the entire payment system of an economy from the use of physical cash to a systemic adoption of other non-physical cash mode of payments in settlements of all types of transactions. Telecommunication Technological innovations such as information based new technologies have revolutionized many industries. Queuing management system, Lu, Musalem, Olivares & Schilkrut (2013) conducted an empirical study to analyse how waiting in a queue in the context of a retail store affects customer-purchasing behaviour finding that customer sensitivity to waiting is heterogeneous and negatively correlated with price sensitivity. Social Media digital communication and information platforms in which active users engage in behaviours that can be consumed by others both in real time and long afterwards regardless of their location (Snopes, (2006). Customer Service Charter is an expression of an understanding between citizens and provider of a public service on quantity and quality of services (Elke et al. 2007).

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

The chapter highlights the methods that were used to conduct the research in the collection of data and a plan of how the study was conducted. It shows the research design, study population, sampling techniques, the sample size, data collection instruments, data collection procedures and how data was analysed.

## 3.2 Research Design

Research design to be adopted for this study is a descriptive survey design. Descriptive approach to this study was the most preferred as the study attempts to investigate influence of digital technologies on service delivery in Huduma Centres in Nairobi county. Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or its association with something else (Kothari, 2004).

## 3.3 Target Population

The target population comprising of 656 staff (Huduma Centres, 2018) in the 5 Huduma Centres in Nairobi County distributed as shown in table 3.1.

**Table 3. 1: Distribution of Population**

| Staff | Frequency | Percentage |
|---|---|---|
| **Management** | 72 | 10.97% |
| **Non-management** | 584 | 89.03% |
| **Total** | **656** | **100.00%** |

### 3.4 Sample Determination and Sampling Procedure

The sample size and sampling were determined by employing Formulae by Kothari and stratified random sampling as discussed under:

#### 3.4.1 Sample Size

The study calculated the sample size using the formulae by Kothari (2009) as shown in the formulae below:

$$n = \frac{z2pqN}{e2(N-1) + z2Pq}$$

Where **e** is the error for this study, taken as 8%; p is the population reliability, taken as p=0.5; q= (1-p), **z** is the normal distribution at 0.05 level of significance such that **z** =1.96, n= sample size and N= population size. The sample size is therefore calculated as shown below using Kothari and Garg (2014) formulae.

$$n = \frac{1.96*1.96*0.5*0.5*656}{0.08*0.08\ (656-1) + 1.96*1.96*0.5*0.5}$$

n= 134.56

n= 135

#### 3.4.2 Sampling Procedure

This study adopted stratified sampling. This is a sampling process of selecting certain number of individual in areas to represent the entire. It involved dividing the population into significant strata based on management levels. The target population was divided into management and non-management staff involved in provision of services at the Huduma centres. Stratified sampling offers better precision compared to simple random sampling when the strata are homogenous internally but varies from one to another. According to Kothari (2009), a method of proportional allocation used adopted in which samples sizes from each stratum were kept proportional to the sizes of the strata as shown in table 3.2.

**Table 3. 2: Sample Size Distribution**

| Group | Population | Percentage | Sample |
|---|---|---|---|
| **Management staff** | 72 | 10.97% | 15 |
| **Non-management staff** | 584 | 89.03% | 120 |
| **Total** | **656** | **100.00%** | **135** |

Thereafter, specific staff to take part in the study were selected from each stratum using simple random sampling technique.

### 3.5 Research Instruments

The questionnaire was administered to employees of the two Huduma centres within Nairobi CBD. The questionnaires contained structured questions. The closed-ended questions were designed using the Likert measurement scale of 1-5 where: 1. Strongly disagree, 2. disagree, 3. neutral, 4. agree, 5. strongly agree.

#### 3.5.1 Piloting the Instruments

To ensure the reliability and validity of the questionnaires in this study, a pre-test was undertaken during pilot study. This test validated the questionnaire for the main study. According to Mugenda and Mugenda (2009), the number of responded cases in the pilot study should be 10% of the sample size. Hence, in this case, thirteen questionnaires were administered during the pre-test as making 10% of the sample size. This assisted to make any necessary correction in the questionnaire and make it possible for a similar study to be reciprocated with consist results. The researcher selected a pilot group of ten respondents from Huduma center along Kenyatta Avenue to test the questionnaires. The ten respondents selected for pilot study were not be involved in final study.

#### 3.5.2 Validity of the Instruments

Validity is the degree by which the sample of test items represents the content the test is designed to measure (Borg & Gall, 1989). There are two forms of validity, namely

internal and external validity. Internal validity is referred to as a causal relationship between the independent and dependent variable. External validity concerns how well research results can be generalized to other situations (Bryman and Bell, 2007). Content validity was employed by this study is a measure of the degree to which data collected using a particular instrument represented a specific domain or content of a particular concept. To ensure validity of the research instruments, the researcher involved research experts in project management to help in evaluating the questionnaires.

### 3.5.3 Reliability of the Instruments

Reliability is the extent to which a measure, procedure or instrument yields the same result on repeated trials (Eriksson and Kovalainen, 2008). The study used internal consistency method to measure reliability. Internal consistency was tested using Cronbach's Alpha. Cronbach's Alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. To ensure reliability, a predetermined threshold of 0.7 and above was needed. The value of Cronbach's Alpha for all the variables were above the threshold of 0.7 hence the questionnaire used in the study was reliable enough in measuring the content with high degree of reliability.

## 3.6 Data Collection Procedure

This study used primary data by using questionnaire. The researcher used the 'drop and pick' method of distributing the questionnaires. Each questionnaire were delivered to the selected respondents for final filling. The questionnaires was distributed to the staff with the help of public relations officer at the Huduma centres. The respondents were given three days to fill the questionnaires. The questionnaires were later collected for review and use in data entry.

## 3.7 Data analysis Techniques

The researcher adopted quantitative techniques in analysing the data. After receiving questionnaires from the respondents, the responses edited, classified, coded and tabulated to analyse quantitative data. SPSS version 23 aided in data analysis. Data analysis involved both descriptive and inferential statistics. Descriptive statistics involved mean

and standard deviation. Inferential statistics involved multi-regression analysis aid in establishing relationship between study variables at 95% confidence level. Tables were used for further representation of findings. The following analytical model was used in data analysis. The model helped determine the relationship between the dependent and independent variables as given below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where; $\alpha$ = Constant

$\beta_1$, $\beta_2$, $\beta_3$, $\beta_4$ and $\beta_5$ coefficients of independent variables

Y = customer service delivery

$X_1$ = cashless system

$X_2$ = telecommunication

$X_3$ = automated queuing management system

$X_4$ = social media

$X_5$ = Customer service charter

$\varepsilon$ = Stochastic disturbance error term

### 3.8 Ethical Considerations

Effort were made to explain to the participants the importance of the study; request them to participate in the study by giving information relevant for the study in so doing, seek consent from them before commencing the interview. Participants were also allowed leave before the end of the session in case they changed their mind. The researchers endeavored to develop a good rapport with the participants. High level of confidentiality was always assured and observed . Ethical clearance was obtained from University of Nairobi board of postgraduate studies. Administrative clearance was obtained from top management of the Huduma center.

### 3.9 Operationalization of Study Variables

The variables were operationalized as shown in table 3.3 to enable measurement and further analysis

### Table 3. 3 Operationalization of Variables

| objective of the study | Indicators | Measurement Scale | method of collection | instrument | Data Analysis |
|---|---|---|---|---|---|
| To establish the influence of Cashless system on service delivery in Huduma Centres in Nairobi county. | • No of e-payments<br>• No of E-billing<br>• Cost reduction<br>• Number of complains<br>• Speed of service<br>• Number of clients served | ordinal | administering questionnaire | Likert scale questionnaires | • frequencies<br>• percentages<br>• correlation analysis<br>• regression analysis |
| To examine the influence of telecommunication on service delivery in Huduma Centres in Nairobi county. | • No of Telephone calls<br>• No of Text messaging<br>• No of clients | ordinal | administering questionnaire | Likert scale questionnaires | • frequencies<br>• percentages<br>• correlation analysis<br>• regression analysis |
| To assess the influence of Automated Queuing management system on service delivery in Huduma Centres in Nairobi county | • No of clients served with queuing system<br>• No of problems associated with queuing system | ordinal | administering questionnaire | Likert scale questionnaires | • Frequencies<br>• Percentages<br>• Correlation Analysis<br>• Regression analysis |
| To establish the influence of Social media communication on service delivery in Huduma Centres in Nairobi county. | • No of clients using Messaging Platform<br>• No of Voice and video calls<br>• No of E-meetings conducted on platform | ordinal | administering questionnaire | Likert scale questionnaires | • Frequencies<br>• Percentages<br>• Correlation Analysis<br>• Regression Analysis |

Source: Author (2018)

# CHAPTER FOUR

# DATA ANALYSIS, PRESENTATION AND INTERPRETATION

## 4.1 Introduction

This chapter presents the data analysis, findings, discussion and interpretation of the study.

## 4.2 Questionnaire Response Rate

The study distributed 135 questionnaires out of which 108 questionnaires were filled and returned making the return rate of 80%, which was adequate for analysis. The study was able to establish high response rate through follow up on questionnaires filling with a telephone call and assuring the clients that the information collected would be treated with the utmost confidentiality.

## 4.3 Demographic Information of Respondents

The background information that was retained for analysis relating to the respondents included the number of years the institution has been in existence, gender distribution and the number of years worked at the firm. The results are summarized in Table 4.1, 4.2, 4.3 and 4.4.

### 4.3.1 Gender of the Respondents

This section presents gender information of the respondents. The results are tabulated in table 4.1

**Table 4. 1: Gender of Respondents**

| variable | Category | Frequency | Percent |
|---|---|---|---|
| Gender | Males | 59 | 54.6 |
| | Females | 49 | 45.4 |
| | Total | 108 | 100.0 |

The study in table 4.1 established that majority 59(54.6%) of the respondents were males with females making up 45.4% of the respondents. The findings show that the Huduma centers have implemented the one third-gender rule introduced in the Kenyan 2010 constitution.

### 4.3.2 Age of Respondents

The study sought to establish the age of the respondents. Table 4.2 shows the responses as per age.

**Table 4. 2: Age of the Respondents**

| Variable | Category | Frequency | Percent |
|---|---|---|---|
| Age | 20-29 years | 21 | 19.4 |
| | 30-39 years | 39 | 36.1 |
| | 40-49 years | 38 | 35.2 |
| | 50 years and above | 10 | 9.3 |
| | Total | 108 | 100.0 |

Table 4.2 shows that majority 60 (55.5%) of the respondents are below the age of 40 years showing that the respondents are youthful and can easily adopt new digital technologies implemented by the Huduma centres in Nairobi county.

### 4.3.3 Years of Experience of Respondents

The study sought to establish the years of experience of the respondents. Table 4.3 shows the tenure of the respondents.

**Table 4. 3: Experience of the Respondents**

| Variable | Category | Frequency | Percent |
|---|---|---|---|
| Experienc | Less than 1 year | 12 | 11.1 |
| e | 1-3 years | 39 | 36.1 |
| | 4-6 years | 53 | 49.1 |
| | Above 6 years | 4 | 3.7 |
| | Total | 108 | 100.0 |

Table 4.3 shows that majority 53 (49.1%) of the respondents had worked in the Huduma centers for four to five years, 39(36.1%) have 1-3 years' experience, less than one year were only 12(11.1%). This signifies that there is low staff turnover by employees in the

firms. Hence, they could employ their long years of tacit knowledge with their respective firms to improve customer service delivery.

### 4.3.4 Position of Respondents in the Organization

The respondents were drawn from both management and non-management staff. This is captured in table 4.4

**Table 4. 4: Position in the Organization**

| Variable | Group | Frequency | Percent |
|---|---|---|---|
| Position | Non-Management | 98 | 90.7 |
| | Management | 10 | 9.3 |
| | Total | 108 | 100.0 |

Table 4.4 shows that out of all the 108 respondents who filled the questionnaires, 90.7% were non-management staff with the remaining 9.3% being management. The results shows that Huduma centre have few management staff having many subordinates working under them. The Huduma centres thus have flat structures that are very effective when introducing digital technologies.

## 4.4 Descriptive Analysis

The aim of the descriptive statistics was to describe the general distributional properties of the data, to identify any unusual observations or any unusual patterns of observations that may cause problems for later analysis to be carried out on the data. Thus, initial exploration of the data using simple descriptive tools was provided to describe the study respondents as well as summarize the data generated for the study. The following section provides the descriptive statistics as per the objectives of the study.

### 4.4.1 Cashless System and Customer Service Delivery

Cashless system was identified as one of the digital technologies implemented by Huduma Centers in Nairobi county Kenya. Therefore, the present study sought to examine the influence of cashless system on customer service delivery. Measures were

presented on a Likert Scale (five-point) as follows; 1=strongly disagree, 2= Disagree, 3=Not sure, 4=Agree, 5=strongly agree. These results are as summarized in Table 4.5

**Table 4. 5: Perception on Cashless system**

| Statements on Cashless system | SD | D | N | A | SA | Mean | Std. Dev. |
|---|---|---|---|---|---|---|---|
| All receipts of money are through mobile banking | 0 | 11.1 | 0 | 69.4 | 19.4 | 4.08 | 0.549 |
| We discourage customers from paying services in cash | 0 | 0 | 6.5 | 69.4 | 24.1 | 4.18 | 0.526 |
| We bill our customers in electronically | 0 | 0 | 6.5 | 54.6 | 38.9 | 4.32 | 0.593 |
| We make payment for supplies using other means other than cash | 0 | 0 | 5.6 | 51.9 | 42.6 | 4.37 | 0.59 |

The results are shown in table 4.5. Majority (88.8%) of the respondents supported the statement that all receipts of money are through mobile banking. In addition, the mean response of $\mu x = 4.08$ and standard deviation of $\sigma x = 0.549$ also reveal that respondents were of the opinion that all cash receipts are through mobile banking for instance Mpesa and equity money. The statement that the Huduma centres discourage customers from paying services in cash was supported by majority (93.5%) of the respondents. The mean and standard deviation ($\mu x = 4.18$ and $\sigma x = 0.526$) were inclined to the statement that Huduma centres support cashless system.

The statement that the Huduma centres bill their customers electronically was supported by 93.5 % of the respondents. The mean response ($\mu x=4.32$) and the standard deviation of the responses ($\sigma x=0.593$) supported the statement that the Huduma centres bill clients electronically. The statement that Huduma centres make payment for supplies using other means other than cash was supported by 94.4% of the respondents with only 5.6 having contrary opinion. The mean and standard deviation ($\mu x=4.37$ and $\sigma x=0.59$) of the responses also support the statement further hence it is clear that Huduma centres do makes payment to suppliers in other forms apart from currency. Generally, the findings revealed that Huduma centres have adopted cashless system in providing services to their

customers as evidenced by mean responses of above four in all statements ($4.08 \leq \mu x \leq 4.37$).

### 4.4.2 Telecommunication and Customer Service Delivery

Telecommunication is also a digital technology that is currently being used by Huduma centres in service delivery. The study sought to establish the extent to which the Huduma centres are using telecommunication technology in service provision. The findings were presented in table 4.6

**Table 4. 6: Perception on Telecommunication**

| Statements Telecommunication | SD | D | N | A | SA | Mean | Std. Dev. |
|---|---|---|---|---|---|---|---|
| Our organization is using Telephone calls for purposes of most communications with other organizations | 0 | 0 | 9.3 | 76.9 | 13.9 | 4.05 | 0.481 |
| Our organization has the latest internal telephones for internal communication | 0 | 1.9 | 0.9 | 63 | 34.3 | 4.28 | 0.667 |
| Our organizations rely majorly on Internet to serve our clients | 0 | 1.9 | 0.9 | 49.1 | 48.1 | 4.44 | 0.616 |
| Our organization uses text messaging majorly to communicate with clients | 0 | 0 | 7.4 | 61.1 | 31.5 | 4.24 | 0.578 |
| Our organization uses text messaging to communicate with internal members of the organization | 0 | 0 | 4.6 | 54.6 | 40.7 | 4.36 | 0.571 |

Table 4.6 presents the findings on the extent to which telecommunication technology has been adopted in improving the customer service delivery at Huduma centres in Nairobi County. Majority of respondents (90.8%) who either strongly agreed or just agreed with the statements supported the statement that Huduma centres are using Telephone calls for purposes of most communications with other organizations. The mean and standard deviation ($\mu x = 4.05$ and $\sigma x = 0.481$) were also inclined to support of usage of telecommunication technology in communication with other organizations. Majority (97.3%) of the respondents were of the opinion that Huduma centres has the latest

internal telephones for internal communication. The mean responses (μx= 4.28) were also above four implying support for the statement on usage of latest telephone for internal communication. The standard deviation (σx=0.667) was low for the responses around the mean. The statement that Huduma centres rely majorly on Internet to serve clients was supported by most (97.2%) respondents who felt that the organization rely much on internet to deliver services. The mean (μx=4.44) responses of above four and low standard deviation (σx=0.616) also provided evidence on the high usage of internet in service provision in Huduma centres. The statement that the Huduma centres uses text messaging majorly to communicate with clients was supported by 92.6 % of all the respondents signifying high usage of text messages in service delivery at Huduma centres. The mean (μx=4.24) responses of above four and low standard deviation (σx=0.578) are also in support of the statement. Finally, the statement that Huduma centres uses text messaging to communicate with internal members of the organization like the staff was supported by majority (95.3%) of respondents. The mean responses of above four and low standard deviation around the mean (μx=4.36 and σx=0.571) were in support of the statement on usage of text messages in communication with members of staff. Generally, the adoption of telecommunication technology in delivery of services to clients is high as evidence by mean responses of above four in all the statements ($4.05 \leq \mu x \leq 4.44$).

### 4.4.3 Automatic Queuing management system and Customer Service Delivery

Automatic queuing management system is a digital technology that has been adopted by Huduma centres to manage long ques experience in various Huduma centres across Nairobi County. The study sought to establish the extent of usage of automatic queuing management system in service delivery as presented in table 4.7.

**Table 4. 7: Perception on usage of automatic queuing management system**

| **Automatic Queuing Management System** | SD | D | N | A | SA | Mean | Std. Dev. |
|---|---|---|---|---|---|---|---|
| Our organization has adopted automatic que management system | 0 | 1.9 | 8.3 | 87 | 2.8 | 4.11 | 0.422 |
| Our organization has successfully implemented the automated que management | 0 | 0 | 6.5 | 68.5 | 25 | 4.19 | 0.532 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| system | | | | | | | |
| the new system of que management has improved efficiency of que management | 1.9 | 3.7 | 1.9 | 45.4 | 47.2 | 4.32 | 0.841 |
| Our organization has provided enough seats where clients can rest while waiting for their time | 0 | 0.9 | 5.6 | 35.2 | 58.3 | 4.51 | 0.648 |
| The new system of que management is more efficient compared to the older system of que management | 0 | 1.9 | 4.6 | 42.6 | 50.9 | 4.41 | 0.749 |
| Que management has also helped to minimise conflicts associated with customers on a que | 1.9 | 1.9 | 8.3 | 60.2 | 27.8 | 4.10 | 0.773 |

Majority (89.8%) of the respondents who either strongly agreed or just agreed supported the statement that Huduma centres has adopted automatic que management system for the management of ques at the halls. The mean ($\mu x$=4.11) response of above four and low standard deviation ($\sigma x$= 0.422) are in support of the statement on implementation of automatic queuing management system in service delivery. Majority (93.5%) of the respondents surveyed were of the opinion that Huduma centres have successfully implemented the automated que management system as evidenced further by mean response of above four and low standard deviations around the mean ($\mu x$= 4.19 and $\sigma x$= 0.532). The statement that the new system of que management has improved efficiency of que management at Huduma centre premises were supported by 92.6% of the respondents surveyed. In addition, mean responses and standard deviation ($\mu x$= 4.32 and $\sigma x$=0.841) supported the statement on the efficiency improvement brought about by the new system of que management. Most (93.5%) of the respondents were inclined to support the statement that Huduma centres have provided enough seats where clients can rest while waiting for their time. The mean responses of above four and low standard deviation ($\mu x$=4.51 and $\sigma x$=0.648) further serves as evidence of support of the statement that Huduma centres have adequate seats for clients to sit as they wait for their turn on the que management system. The statement that new system of que management is more efficient compared to the older system of que management was supported by 93.5% of the respondents surveyed. The mean ($\mu x$= 4.41) response was also above four with low

standard deviation around the mean of σx= 0.749. Finally, majority (88%) of the respondents were of the view that Que management system has also helped to minimise conflicts associated with customers on a que as evidenced further by mean and standard deviation of μx= 4.1 and σx= 0.773 respectively. Generally, the results revealed that automatic que management system was successfully implemented in majority of Huduma centres in Nairobi County and that they were contributing greatly to service provision in the centres as evidenced by mean responses of above four ($4.10 \leq \mu x \leq 4.51$).

### 4.4.4 Social Media and Customer Service Delivery

Social media is a digital technology that has been affecting business operations in the contemporary business environment. The study sought to examine the extent to which Huduma centres have adopted social media in the customer service delivery at Huduma centres in Nairobi County as presented in table 4.8

**Table 4. 8: perception on Social Media use in customer service delivery**

| Statements | SD | D | N | A | SA | Mean | Std. Dev |
|---|---|---|---|---|---|---|---|
| Our organization has adopted use of social media plat forms like Facebook and wats app | 0 | 0 | 5.6 | 63 | 31.5 | 4.26 | 0.553 |
| our organization uses the messaging platform of social media to communicate with the general public about our services | 0 | 1.9 | 8.3 | 48.1 | 41.7 | 4.30 | 0.701 |
| Our organization uses E-meetings platform of social media to conduct meetings with members when not physically connected | 0 | 0 | 11.1 | 55.6 | 33.3 | 4.22 | 0.631 |
| Our organization uses the messaging platform to communicate to staff members | 0 | 1.9 | 4.6 | 45.4 | 48.1 | 4.40 | 0.669 |
| Our organization uses the voice and video presented by social media platform to communicate to members of staff | 0 | 1.9 | 6.5 | 49.1 | 42.6 | 4.32 | 0.681 |

The statement that Huduma centres have adopted use of social media plat forms like Facebook and WhatsApp was supported by majority (94.5%) of the respondents surveyed were of the opinion that the centres have adopted various social media applications in

customer service delivery. The mean responses of above four on the Likert scale and low standard deviation also supports the statements on the usage of social media ($\mu x$=4.26 and $\sigma x$= 0.553). Most respondents (89.8%) were in support of the statement that Huduma centres uses the messaging platform of social media to communicate with the public about their services. The mean response of $\mu x$= 4.3 and standard deviation of $\sigma x$= 0.701 is also inclined to the statement about usage of social media messaging platform in customer service delivery. The statement that Huduma centres uses E-meetings platform of social media to conduct meetings with members when not physically connected was supported by 88.9% of the respondents who were part of the survey. In addition, the mean responses and standard deviation were inclined to supporting the statement on usage of e-meeting platforms in conducting staff meetings ($\mu x$= 4.22 and $\sigma x$= 0.631). Most (93.5%) of respondents supported the statement that Huduma centres uses the messaging platform to communicate to staff members. The support of the statement was further evidenced by mean responses of above four and low standard deviation around the mean ($\mu x$= 4.4 and $\sigma x$= 0.669). Finally, the statement that Huduma centres uses the voice and video presented by social media platform to communicate to members of staff was supported by 91.7% of the surveyed respondents. In general, the responses on the various statements reveal that there is high adoption of social media in customer service delivery in Huduma centres as evidenced by mean responses of above four ($4.22 \leq \mu x \leq 4.40$).

### 4.4.5: Customer Service Delivery

Service delivery is the dependent variable of concern for the current study. The study sought to establish the level of customer service delivery at Huduma centres in Nairobi County as presented in table 4.9.

**Table 4. 9: perception on customer service delivery**

| Statements | SD | D | N | A | SA | Mean | Std. Dev |
|---|---|---|---|---|---|---|---|
| Our organization Efficiency in serving clients has improved with adoption of technologies | 0 | 0.9 | 6.5 | 71.3 | 21.3 | 4.12 | 0.591 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| We serve our customers in a timely manner aided by digital technologies | 0 | 1.9 | 3.7 | 66.7 | 27.8 | 4.19 | 0.672 |
| Our customers are served at their Convenience with digital technologies like cashless system | 0 | 0 | 2.8 | 49.1 | 48.1 | 4.45 | 0.553 |
| The Quality of services has improved greatly with adoption of digital technologies | 0 | 1.9 | 1.9 | 48.1 | 48.1 | 4.41 | 0.711 |
| The Speed of service delivery has improved greatly with adoption of digital technologies | 0 | 0 | 2.8 | 58.3 | 38.9 | 4.36 | 0.538 |

Table 4.9 presents findings on level of customer service delivery at Huduma centres in Nairobi county Kenya. The statement that Huduma centres' efficiency in serving clients has improved with adoption of digital technologies was supported by 92.6% of the respondents who participated in the survey. The mean response of above four and low standard deviation ($\mu x=4.12$ and $\sigma x=0.591$) further supports the statement that adoption of technology in service delivery has improved efficiency. The statement that Huduma centre serve their customers in a timely manner aided by digital technologies was supported by 94.5 % who either strongly agreed or just agreed with the statement. The mean responses was also above four ($\mu x= 4.19$ and $\sigma x= 0.672$) hence supporting the statement further. Majority (97.2) of the respondents surveyed were of the opinion that Huduma centres customers are served at their Convenience with digital technologies like cashless system. The mean responses and standard deviation ($\mu x=4.45$ and $\sigma x= 0.553$) further supports the statement hence it is clear customers gets services conveniently with adoption of technologies like cashless system. The statement that quality of services has improved greatly with adoption of digital technologies was supported by 96.2% of the respondents. In addition, the mean responses and the standard deviation are an evidence on the improved quality of services at Huduma centres ($\mu x=4.41$ and $\sigma x= 0.711$). Finally, the statement that Speed of service delivery has improved greatly with adoption of digital technologies was supported by 97.2%. The mean responses of above four ($\mu x=4.36$ and $\sigma= 0.538$).In general, customer service delivery has generally been improved by adoption of digital technologies.

### 4.5 Regression Analysis

The study adopted multivariate regression model to establish the influence of digital technologies on customer service delivery. The independent variables were cashless system, Telecommunication, automatic queuing management system and social media. The dependent variable was customer service delivery. Multiple regression analysis involved calculation of coefficient of determination ($R^2$), Analysis of Variances (ANOVA) and regression coefficients as presented in tables 4.10, 4.11 and 4.12.

**Table 4. 10 Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .638[a] | .407 | .384 | .25876 |

**a. Predictors: (Constant), Social Media, Cashless System, Que management system, Telecommunication**

In table 4.10, the overall correlation coefficient (R) between independent variables digital technologies and customer service delivery was found to be .638. This means that there was a moderate positive relationship between digital technologies and customer service delivery in Huduma centers in Nairobi. Furthermore, it indicates that the model explains only 40.7 % of the variations in customer service delivery in Huduma centres in Nairobi county Kenya as shown by coefficient of determination (**$R^2$**) of 0.407 with the remaining 59.3 % of the variation in customer service delivery being explained by other factors that were not part of the analysis model.

**Table 4. 11: Analysis of Variances (ANOVA)**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4.740 | 4 | 1.185 | 17.700 | .000[b] |
| | Residual | 6.896 | 103 | .067 | | |
| | Total | 11.637 | 107 | | | |

**a. Dependent Variable: Service Delivery**
**b. Predictors: (Constant), Social Media, Cashless System, Que management system, Tele communication**

Table 4.11 shows that the F value of 17.700 with an overall significance of model 1 was .000. The level of significance was lower than 0.05 and this means that digital technologies shows statistically significant influence on customer service delivery in Huduma centers in Nairobi County.

**Table 4. 12: Coefficients of Independent Variables**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 1.587 | .380 | | 4.172 | .000 |
| | Cashless System | .237 | .074 | .042 | 3.202 | .001 |
| | Telecommunication | .201 | .111 | .199 | 1.807 | .074 |
| | Que management system | .259 | .074 | .352 | 3.517 | .001 |
| | Social Media | .141 | .093 | .180 | 1.510 | .134 |

**a. Dependent Variable: Service Delivery**

Table 4.12 further, shows the coefficients of independent variables (cashless system, telecommunication, Automatic queuing system and social media) the values of **p** and values of t. The model was thus estimated as shown in equation (2).

**Customer service delivery =** 1.587 **+** .237 **cashless system +** .201 **telecommunication + .259 automatic queuing management system +** .141 **social media.....(2)**

The estimated model equation simplifies the relationship between digital technologies and customer service delivery in Huduma centers in Nairobi Kenya. The value 1.587 is the intercept term of the model showing the level of customer service delivery when the independent variable in the model are held constant at zero. Cashless system had a statistically significant influence on customer service delivery ($\beta_1 = .237$, $p = .001 < \alpha = 0.05$). Telecommunication had statistically insignificant influence on customer service delivery ($\beta_2 = .201$ and $p = .074 > \alpha = 0.05$). Automatic queuing management system had a statistically significant influence on customer service delivery ($\beta_3 = .259$, $p = .001 < \alpha = 0.05$). Finally, social media had a statistically insignificant influence on customer service delivery ($\beta_4 = .141$, $p = .134 > \alpha = 0.05$).

# CHAPTER FIVE: SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

The chapter provides a summary of findings, presents conclusions from the findings upon which recommendations are made, and then finally suggestions for further research. This study aimed to examine the influence of digital technologies on customer service delivery in Huduma Centres in Nairobi county Kenya.

## 5.2 Summary of Findings

The study findings indicated that the customer service delivery could be attributed to selected digital technologies including cashless system, telecommunication, automatic queuing management system and social media the individual summaries of all the variables are presented in the following sub-section.

### 5.2.1 Cashless System and Customer Service Delivery

Generally, the descriptive findings revealed that Huduma centres have adopted cashless system in providing services to their customers as evidenced by mean responses of above four in all statements ($4.08 \leq \mu x \leq 4.37$). In addition, regression analysis established that Cashless system had a statistically significant influence on customer service delivery. Further, the coefficient is positive showing positive influence and a unitary change in cashless system leads to .237 units change in customer service delivery in the same direction of change as do the cashless system.

### 5.2.2 Telecommunication and Customer Service Delivery

Descriptive analysis revealed that the adoption of telecommunication technology in delivery of services to clients is high as evidence by mean responses of above four in all the statements ($4.05 \leq \mu x \leq 4.44$). Telecommunication had statistically insignificant influence on customer service delivery. Further, the coefficient is positive showing positive influence and a unitary change in telecommunication leads to .201 units change in customer service delivery in the same direction of change as do the cashless system.

### 5.2.3 Automatic queuing management system and Customer Service Delivery

Generally, descriptive analysis revealed that automatic queuing management system was successfully implemented in majority of Huduma centers in Nairobi County and that they were contributing greatly to service provision in the centers as evidenced by mean responses of above four ($4.10 \leq \mu x \leq 4.51$). Regression revealed that, automatic queuing management system had a statistically significant influence on customer service delivery. The coefficient of Automatic queuing management system was positive implying that the adoption of the system has contributed to improved customer service delivery in the Huduma centers. Additionally, one-unit change in queuing management system translates to improvement in customer service delivery by .259 units.

### 5.2.4 Social media and Customer Service Delivery

In general, the responses on the various statements reveal that there is high adoption of social media in customer service delivery in Huduma centres as evidenced by mean responses of above four ($4.22 \leq \mu x \leq 4.40$). Social media had a statistically insignificant influence on customer service delivery. The effect was insignificant implying that the adoption of social media is not a major contributor to the improvement in customer service delivery at Huduma centers in Nairobi Kenya. The coefficient of social media was positive implying that even though social media did not have major influence on customer service delivery, any improvement in usage of social media by one-unit leads to .134 units improvement in customer service delivery.

## 5.3 Discussion of Findings

The section explains the regression results in terms of research objectives. The independent variables have been related with customer service delivery at Huduma Centers in Nairobi.

### 5.3.1 Influence of Cashless System on Customer Service Delivery

The study established that Cashless system had a statistically significant influence on customer service delivery ($\beta_1 = .237$, $p = .001 < \alpha = 0.05$). The influence was significant meaning cashless system was very important to customer service delivery. Customers did

not have to carry hard currency with them but can easily make payment for services via cashless system avenues like Mpesa, Equitel money etc. Further, the coefficient is positive showing positive influence and a unitary change in cashless system leads to .237 units change in customer service delivery in the same direction of change as do the cashless system.

This findings agrees with study by Ankra (2012) who found that every one of the banks studied are had adopted mobile banking and clients were observed to be happy with the banks.In addition, Shendge, Shelar and Kapase (2017) noted cashless policy would increase employment, reduce cash related robbery thereby reducing risk of carrying cash. Cashless policy will also reduce cash related corruption and attract more foreign investors to the country. Asiligwa and Omwenga (2016) showed that County governments are successfully implementing E-payment to overcome the challenges of the corruption earlier experienced by the former city, municipal and county and therefore enhance optimal revenue collection. Mathew (2014) showed that E-payment has been designed to help individual customers and companies as well as the banks itself in eliminating or reducing some of the problems inherent in the settlement and payment process.

### 5.3.2 Influence of telecommunication on Customer Service Delivery

Telecommunication had statistically insignificant influence on customer service delivery ($\beta_2$=.201 and p = .074 > $\alpha$ =0.05). The study established that telecommunication had a statistically insignificant influence on customer service delivery. The influence was not significant meaning that adoption of telecommunication services like calls and messaging by Huduma, centers have not contributed much to customer service delivery. Further, the coefficient is positive showing positive influence and a unitary change in telecommunication leads to .201 units change in customer service delivery in the same direction of change as do the cashless system.

Empirical literature agrees with findings of the present study. Study by Muriithi (2013) concluded that the investment in ICT has a significant positive influence on the service delivery. Report on the Review of ICT governance in Queensland Government prepared

by Service Delivery and Performance Commission (2006) revealed that investment in technology provides significant benefits to government organizations, industries and the community at large, including increased accessibility, inclusivity and flexibility in service delivery. Dhakal and Jamil (2010 concluded that improvements have been felt through the application of ICTs; however, there was a feeling that there is still lack of skills on the use ICT for the better delivery of services.

### 5.3.3 Influence of queuing management system on Customer Service Delivery

Automatic queuing management system had a statistically significant influence on customer service delivery ($\beta_3 = .259$, $p = .001 < \alpha = 0.05$). The influence was statistically significant meaning that the adoption of automatic queuing management was very instrumental in improving customer service delivery. The coefficient of Automatic queuing management system was positive implying that the adoption of the system has contributed to improved customer service delivery in the Huduma centers. Additionally, one-unit change in queuing management system translates to improvement in customer service delivery by .259 units.

The finding are in congruence with study by Lu, Musalem, Olivares and Schilkrut (2013) who finds that waiting in queue has a non-linear effect on purchase incidence and that customers appear to primarily focus on the length of the queue rather than the actual expected wait when making their purchase decisions. In addition, Mwangi and Ombuni (2015) study found out that almost no customers are satisfied about the nature of waiting lines and some students have turned away at regular occasions due to the long queues. The time students wait to be served should not be overlooked; constant check for their changing needs and improvement in the time spent when serving them has been emphasized by the study. As a result, waiting has drawn great attention to all business operation management specialists. Finally, Opara-Nadi (2005) showed that customers want fast checkout systems and retailers are always searching for ways to improve store checkout systems.

### 5.3.4 Influence of social media on Customer Service Delivery

Social media had a statistically insignificant influence on customer service delivery ($\beta_4$ = .141, p = .134 > $\alpha$ = 0.05). The effect was insignificant implying that the adoption of social media is not a major contributor to the improvement in customer service delivery at Huduma centers in Nairobi Kenya. The coefficient of social media was positive implying that even though social media did not have major influence on customer service delivery, any improvement in usage of social media by one-unit leads to .134 units improvement in customer service delivery.

The findings are in agreement with study by Mwangi (2012) who indicated that social media has enabled the company to work more efficiently and innovative and gain more customer satisfaction when it comes to customer service, there has been a great increase in customer satisfaction levels and also increased number of users of the social media channels. Kiertzman et al, (2011) contends that social media presents an enormous challenge for firms, as many established management methods are ill-suited to deal with customers who no longer want to be talked at but who want firms to listen and engage. Buss and Begorgis (2015) who indicated Social Media is not the most effective Customer Relationship Management tool, nevertheless a weak relationship was found and thus Social Media can be used in addition to the companies' already established Customer Relationship Management activities.

## 5.4 Conclusion

The study sought to examine the influence of digital technologies on customer service delivery in Huduma centres in Nairobi County.

Concerning the first research question, the study concludes that the influence of cashless system was significant meaning cashless system was very important to customer service delivery. Customers did not have to carry currency money with them but can easily make payment for services via cashless system avenues like Mpesa, Equitel money etc.

In relation to the second research question, the study concluded that telecommunication had a statistically insignificant influence on customer service delivery. The influence was

not significant meaning that adoption of telecommunication services like calls and messaging by Huduma, centers have not contributed much to customer service delivery.

In relation to the third research question, the study concluded that influence of automatic queuing management system was statistically significant meaning that the adoption of automatic queuing management was very instrumental in improving customer service delivery.

Finally, concerning the fourth research question, study concludes that social media had statistically insignificant influence on customer service delivery implying that the adoption of social media is not a major contributor to the improvement of customer service delivery at Huduma centers in Nairobi Kenya.

### 5.5 Recommendations

Based on the findings the study, the research makes several recommendations. Concerning Cashless system, with the results pointing at major contribution of cashless system to customer service delivery, the study recommends to top management of Huduma centers to continue adopting various cashless system technologies to continue enhancing customer service delivery. The management should accept as many cashless payment platforms as possible for instance Mpesa, Equitel money, plastic money among other cashless payments. Improved cashless system should make it easier for customer to make payment for various services they seek hence enhanced customer service delivery.

Secondly, concerning telecommunication, even though the study fails to find significant relationship, the relationship was positive. The study wishes to recommend to the top management of Huduma Centers to continue embracing various telecommunication technologies available in the market. The management should embrace text messaging, video calls, voice calls among other technologies. Improved uptake of various telecommunication technologies would make it easier for the Huduma centers to communicate effectively with clients hence leading to improved customer service delivery.

Thirdly, given that the study finds significant relationship between automatic queuing system and customer service delivery, the study wishes to recommend to the top management of Huduma centers in Nairobi Kenya to continue using the automated queuing management system to maintain the customer service delivery. The management should be concerned with continuous improvement in the queuing management system to ensure the system rarely breaks down and stops servicing the customers. Improved and well working automatic queuing management system should ensure customer are served faster with reasonable time to reduce backlogs of waiting.

Finally, the study established a positive relationship between social media adoption and customer service delivery even though the relationship was not significant. Based on the finding, the research recommends to management of Huduma centers in Nairobi County to continue utilizing social media platforms to enhance customer service delivery. The centers should adopt as many social media platforms to enhance service delivery especially to the youthful population of customers. Social media is a cheaper way to communicate and interact with customers in establishing long-term relationship.

### 5.6 Suggested Areas for Further Studies

The current study on the influence of digital technologies on customer service delivery has successfully been carried out; however, the findings and recommendations are more relevant for Huduma centers in Nairobi and may not apply in other Huduma centers within the country, the study recommends that future studies should be carried out in all Huduma centers within the country.

The study also recommends that the scope of the current study should be expanded to include more digital technologies. In addition, future studies should introduce moderating variables like performance contracts identify how they influence the relationship between the adoption of digital technologies and customer service delivery.

## REFERENCES


Abor, J. (2005). Technological innovations and banking in Ghana: an evaluation of customers' perceptions. *IFE Psychologia: An International Journal*, *13*(1), 170 187.

Adewale A. (2012), "Evaluating the Systemic Transition to a Cashless Economy in Nigeria" available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2050657

Ahmad, A. M. K., & Al-Zu'bi, H. A. (2011). E-banking functionality and outcomes of customer satisfaction: an empirical investigation. *International Journal of Marketing Studies*, *3*(1),50.

Akhalume P.B., and Ohiokha F. (2012), "Nigeria's Cashless Economy: The imperatives". International Journal of Management & Business studies. 2(2):31-37

Almossawi, M. M. (2012). Customer satisfaction in the mobile telecom industry in Bahrain: Antecedents and consequences. *International Journal of Marketing Studies*, *4*(6), 139.

Amazon Web Services, Inc. (2018, January 1). What is cloud computing? Retrieved April 9, 2018, from AWS: https://aws.amazon.com/what-is-cloud-computing/

Asiligwa, B. I., & Omwenga, E. I. (2016). A Roadmap for the Adoption of Government E payment in Kenya. *International Journal of computer Applications*, *144*(1).

Balunywa, W., Nangoli, S., Mugerwa, G. W., Teko, J., & Mayoka, K. G. (2014). An analysis of fiscal decentralization as a strategy for improving revenue performance in Ugandan Local governments. *Journal of Research in International Business and Management*, *4*(2), 28 36.

Baragwanath C.A. (1996). *Timeliness of Service Delivery: A customer's right Empowering the Customer:* The Citizen in Public Sector Reform.

Bello, Z. Y. (2005). Socially responsible investing and portfolio diversification. *Journal of Financial Research*, *28*(1), 41-57.

Berners-Lee, T. (2010). Long live the web. *Scientific American*, *303*(6), 80-85.

Bill Price and David Jaffe (2011). *The Best Service is No Service: How to Liberate Your Customers.*

Bojanova, Irena (3 February 2018). "The Digital Revolution: What's on the Horizon?". *IT Professional*. **16** (1): 8–12.

Bolton, R. N., Parasuraman, A., Hoefnagels, A., Migchels, N., Kabadayi, S., Gruber, T., ... & Solnet, D. (2013). Understanding Generation Y and their use of social media: a review and research agenda. *Journal of service management*, *24*(3), 245-267.

Buss, O., & Begorgis, G. (2015). The impact of social media as a customer relationship management tool: A B2B perspective.

Casu, B., & Thanassoulis, E. (2006). Evaluating cost efficiency in central administrative services in UK universities. Omega, 34(5), 417-426.

Cook, D. A., Levinson, A. J., Garside, S., Dupras, D. M., Erwin, P. J., & Montori, V. M. (2008). Internet-based learning in the health professions: a meta-analysis. *Jama*, *300*(10), 1181- 1196.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science*, *35*(8), 982-1003.

Davis M. M, Aquilano M. J. N, Chase B. R (2003), "Fundamentals of Operations Management", Boston: McGrawHill Irwin, Fourth Edition.

Dhakal, T. N., & Jamil, I. (2010). Prospects and Challenges of E-Governance for Service Delivery in Nepal. *Reaching out to People, Achieving Millennium Development Goals through Innovative Public Service Delivery, Trivandrum, India, December* 11-13.

Ebeiyamba Oluchukwu, J. (2014). Effect of cashless economy on micro and small-scale businesses in nigeria. *European Journal of Business and Management*, *6*(1),101 106.

Eissa, N., Zeitlin, A., Karpe, S., & Murray, S. (2014). Incidence and Impact of Electronic Billing Machines for VAT in Rwanda.

Ehrmann, M., & Fratzscher, M. (2009). Global financial transmission of monetary policy shocks. *Oxford Bulletin of Economics and Statistics*, *71*(6), 739-759.

Elke Loffler, Salvador Parrado and Tomas Zmeskal (2007). *Improving Customer Orientation through service charters.* A handbook for improving quality of public services. Governance International.

Eshghi, A., Roy, S. K., & Ganguli, S. (2008). Service Quality and Customer Satisfaction: An Empirical Investigation In Indian Mobile Telecommunications Services. *Marketing Management Journal*, *18*(2).

Freeman,C., and Louçã,F.,(2002). As Time Goes By: From the Industrial Revolutions to the Information Revolution, Oxford University Press, USA, 2002.

Heeks, R. (2002). Information systems and developing countries: Failure, success, and local improvisations. *The information society*, *18*(2), 101-112.

Kahneman, D., & Tversky, A. (2013). Choices, values, and frames. In *Handbook of The Fundamentals Of Financial Decision Making: Part I* (Pp. 269-278).

Khan, A., & Hildreth, W. B. (Eds.). (2004). *Financial management theory in the public sector*. Greenwood Publishing Group.

Khatri, J. R., & Upadhyaya-Dhungel, K. (2013). Internet banking in Nepal: Use and challenges. *Banking Journal*, *3*(2), 57-77.

Khan MR, Callahan BB. Planning laboratory staffing with a queueing model. Eur J of Operational Res. 1993; 67:321–31.

Korir, E. (2015). The Effects of Service Quality on Customer Sartisfaction at the Nairobi Huduma Centre. Journal of Business Management, 2(3), 45–52.

Laudon, K., & Laudon, J. (2009). Management Information Systems: International Edition, 11/E. *E: Pearson Higher Education*.

Laudon, K. C., & Laudon, J. P. (2011). *Essentials of management information systems*. Upper Saddle River: Pearson.

Liu, C., & Arnett, K. P. (2000). Exploring the factors associated with Web site success in the context of electronic commerce. *Information & management*, *38*(1), 23-33.

Luarn, P., & Lin, H. H. (2003). A customer loyalty model for e-service context. *J. Electron. Commerce Res.*, *4*(4), 156-167.

Lu, Y., Musalem, A., Olivares, M., & Schilkrut, A. (2013). Measuring the effect of queues on customer purchases. Management Science, 59(8), 1743-1763.

Maister, D. (1985). The Psychology of Waiting Lines. The Service Encounter. J. a. Czepiel, MR Solomon, and C. Suprenant.

Mathew, K., Sundararaman, R., Letchworth-Weaver, K., Arias, T. A., & Hennig, R. G. 2014). Implicit solvation model for density-functional study of nanocrystal surfaces and reaction pathways. *The Journal of chemical physics*, *140*(8), 084106.

Ministry of Devolution & Planning. (2015). Devolution & Planning State Department of Huduma Kenya Does it Again

Mishkin, Frederic and Stanly Eakins, Financial Markets and Institutions, 6 ed., Pearson Prentice Hall, 2009.

Mobarek, A. (2007). E-banking practices and customer satisfaction-a case study in botswana.

Mugenda, O. M., & Mugenda, A. G. (2009). Qualitative and quantitative approaches. *Research Methods Africa Center for Technology Studies (Acts) Press. Nairobi Kenya*.

Muriithi, M. (2013). The causes of non-performing loans in commercial banks in Kenya. *Unpublished Thesis, University of Nairobi*.

Mwangi, S. K., & Ombuni, T. M. (2015). An Empirical Analysis of Queuing Model and Queuing Behaviour in Relation to Customer Satisfaction at Jkuat Students Finance Office. *American Journal of Theoretical and Applied Statistics*, *4*(4), 233-246.

Mutali, E. (2008). Factors influencing quality service delivery in Kenya Ports Authority.

Mwangi, S. K., & Ombuni, T. M. (2015). An Empirical Analysis of Queuing Model and Queuing Behaviour in Relation to Customer Satisfaction at Jkuat Students Finance Office. American Journal of Theoretical and Applied Statistics, 4(4), 233-246.

Mwangi, T. S. (2012). *Influence of social media on customer service in Safaricom limited* (Doctoral dissertation, University of Nairobi).

Ndemo, B. (2016, December 27). How Kenya Became the Cradle of Africa's Technological Innovation. Retrieved February 21, 2018, from News Week: http://www.newsweek.com/how-kenya-became-cradle-africas-ict-innovatio 534694

Ndunda, J., Ngahu, S. T., & Wanyoike, D. (2015). analysis of factors influencing optimal revenue collection by county governments in Kenya: a case of Nakuru County. *International journal of economics, commerce and management. United Kingdom*, *3*(5).

Ng'aru, S & Wafula, M. K. (2015). Factors Influencing the Choice of Huduma Centres ' Services: A Case Study of Mombasa Huduma Centre . *International Journal of Scientific and Research Publications*, 5(6), 1–9.

Opara-Nadi, G. (2005). Electronic self-checkout system vs cashier operated system: A performance based comparative analysis. *Capella University, June*.

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International journal of electronic commerce*, *7*(3), 101-134.

Rabin, M. (1998). Psychology and economics. *Journal of economic literature*, *36*(1), 11 46.

Reffat, R. M. (2006). Computing in architectural design: reflections and an approach to new generations of CAAD. *Journal of Information Technology in Construction (ITCON)*, *11*(45), 655-668.

Romanelli, E., & Tushman, M. L. (1994). Organizational transformation as punctuated equilibrium: An empirical test. *Academy of Management journal*, *37*(5), 1141 1166.

Rouse, M. (2014, March). Information Age. Retrieved February 21, 2018, from Tech target: http://searchcio.techtarget.com/definition/Information-Age

Roy, D. (2014). Cinema in the Age of Digital Revolution. International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS), Vol 1, No.4, 107 -111.

Schoenherr, S. (5 May 2004). The Digital Revolution. Archived from the original on 7 , March 2008.

Schein, E. H. (2010). *Organizational culture and leadership* (Vol. 2). John Wiley & Sons.

Scott, W. R., & Davis, G. F. (2015). *Organizations and organizing: Rational, natural and open systems perspectives*. Routledge.

Shendge, M. P. A., Shelar, B. G., & Kapase, A. P. S. S. (2017). Impact and Importance of Cashless Transaction in India. *International Journal of Current Trends in Engineering &Research (IJCTER), 3*(4), 22-28.

Sultana, M., & Islam, M. M. (2012). Impact of Queue on Customers: An Analysis of Some Retail Shops in Bangladesh.

Tavakoli, Z. B., Ariff, M. S. M., Rahim, K. A., Zakuan, N., & Ismail, K. (2014). The Mediating Effect of e-Satisfaction between e-Service Quality and e-Loyalty in Internet Banking. *Advanced Science Letters*, *20*(10-11), 2215-2219.

Victor Ayeni (2001). *Public Service in Transition: Enhancing Its Role, Professionalism*

Wahab, S. A., Rose, R. C., & Osman, S. I. W. (2012). Defining the concepts of technology and technology transfer: A literature analysis. *International business research*, *5*(1), 61.

Weber, L. (2009) Marketing to the Social Web.John Wiley &Sons, Inc., New Jersey

Welch, E. W., Hinnant, C. C., & Moon, M. J. (2004). Linking citizen satisfaction with e government and trust in government. *Journal of public administration research and theory*, *15*(3), 371-391.

Wellenius, B., & Stern, P. A. (Eds.). (1994). *Implementing reforms in the telecommunications sector: Lessons from experience*. World Bank Publications.

Wilson A., Zeithaml V. A., Bitner M. J. and Gremler D. D. (2008*). Services marketing: integrating customer focus Taylor across the firm*. 1st European Edition. McGraw-Hill Education. PP 108-122.

Wilson, A., Zeithaml, V.A., Bitner, M.J. &Gremler, D.D. (2012). *Services Marketing: Integrating Customer Focus across the Firm* (2nd European edition). Berkshire: McGraw-Hill.

Wilson A., Zeithaml V. A., Bitner M. J. and Gremler D. D. (2008). Services marketing: integrating customer focus Taylor across the firm. 1st European Edition. McGraw Hill Education. PP 108-122.

Wilson, A., Zeithaml, V.A., Bitner, M.J. &Gremler, D.D. (2012). Services Marketing: Integrating Customer Focus across the Firm (2nd Europ

Woldie, A., Hinson, R., Iddrisu, H., & Boateng, R. (2008). Internet banking: an initial look at Ghanaian bank consumer perceptions. *Banks and Bank Systems, 3*(3), 35-46.

# APPENDICES

## Appendix I: Introductory Letter

Dear Respondent,

**RE: RESEARCH DATA COLLECTION**

I am a postgraduate student of University of Nairobi (UON) pursuing Degree of Master of Arts in Project Planning and Management. I am currently collecting data for my research project on "**Influence of Digital Technologies on Service Delivery in the Public Sector: A Case of Huduma Centres in Nairobi County, Kenya"**.

In view of the above, I humbly request you to cooperate in answering the questions in the questionnaires attached here-with. Kindly read the accompanying instructions and respond to the questions as provided for. This will help me collect the necessary data which will help me in carrying out the analysis, hence, achieve the objectives of the study.

The information that you will provide will remain confidential and it will be used exclusively for this research and not for any other purpose whatsoever. Your response and cooperation in this matter will be highly appreciated.

Thank you in advance,

Yours Faithfully,

Lawrence Joshua Matenjwa

**Appendix II: Questionnaire for Staff in Huduma Centres in Nairobi**

Answer all questions by indicating your choice by a tick where appropriate or fill in the blank spaces.

**Section A: Demographic Information**

1. What is your gender?

   Male ☐ Female ☐

2. Indicate your age bracket

   20-29 years ☐ 30-39 years ☐ 40-49 years ☐ 50 and above years ☐

3. Indicate the position you hold in your organization

4. How long have you worked in your organization?

   Less than a year ☐ 1-5 years ☐ 6-10 year ☐ Over 10 years ☐

**Section B: Cashless System**

This section is concerned with assessing the contribution of cashless system to customer service delivery at Huduma centres in Nairobi. Use the following key

**SD** –Strongly Disagree= 1, **D**-Disagree= 2 **N**-Neutral= 3, **A**-Agree= 4 **SA**-Strongly Agree = 5

| | **STATEMENT** | **SD** | **D** | **N** | **A** | **SA** |
|---|---|---|---|---|---|---|
| 1 | All receipts of money are through mobile banking | | | | | |
| 2 | We discourage customers from paying services in cash | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | We bill our customers in electronically | | | | | |
| 4 | We make payment for supplies using other means other than cash | | | | | |

**Section C: Telecommunication**

This section is concerned with assessing the contribution of telecommunication to customer service delivery at Huduma centres in Nairobi. Use the following key

**SD** –Strongly Disagree= 1, **D**-Disagree= 2 **N**-Neutral= 3, **A**-Agree= 4 **SA**-Strongly Agree = 5

| | **STATEMENT** | **SD** | **D** | **N** | **A** | **SA** |
|---|---|---|---|---|---|---|
| 1 | Our organization is using Telephone calls for purposes of most communications with other organizations | | | | | |
| 2 | Our organization has the latest internal telephones for internal communication | | | | | |
| 3 | Our organizations rely majorly on Internet to serve our clients | | | | | |
| 4 | Our organization uses text messaging majorly to communicate with clients | | | | | |
| 5 | Our organization uses text messaging to communicate with internal members of the organization | | | | | |

**Section D: Automated Queuing Management System**

This section is concerned with assessing the contribution of Automated Queuing Management System on customer service delivery at Huduma centres in Nairobi. Use the following key

**SD** –Strongly Disagree= 1, **D**-Disagree= 2 **N**-Neutral= 3, **A**-Agree= 4 **SA**-Strongly Agree = 5

| | **STATEMENT** | **SD** | **D** | **N** | **A** | **SA** |
|---|---|---|---|---|---|---|
| 1 | Our organization has adopted automatic que management system for the management of ques at the hall | | | | | |
| 2 | Our organization has successfully implemented the automated que management system | | | | | |
| 3 | the new system of que management has improved efficiency of que management at our premises | | | | | |
| 4 | Our organization has provided enough seats where clients can rest while waiting for their time | | | | | |
| 5 | The new system of que management is more efficient compared to the older system of que management | | | | | |
| 6 | Que management has also helped to minimise conflicts associated with customers on a que | | | | | |

**Section E: Social Media**

This section is concerned with assessing the contribution of Social Media on customer service delivery at Huduma centres in Nairobi. Use the following key

**SD** –Strongly Disagree= 1, **D**-Disagree= 2 **N**-Neutral= 3, **A**-Agree= 4 **SA**-Strongly Agree = 5

| | STATEMENT | SD | D | N | A | SA |
|---|---|---|---|---|---|---|
| 1 | Our organization has adopted use of social media plat forms like Facebook and wats app | | | | | |
| 2 | our organization uses the messaging platform of social media to communicate with the general public about our services | | | | | |
| 3 | Our organization uses E-meetings platform of social media to conduct meetings with members when not physically connected | | | | | |
| 4 | Our organization uses the messaging platform to communicate to staff members | | | | | |
| 5 | Our organization uses the voice and video presented by social media platform to communicate to members of staff | | | | | |

**Section F: Service Delivery**

Rate the following statements regarding customer service delivery at Huduma centres in Nairobi. Use the following key

**SD** –Strongly Disagree= 1, **D**-Disagree= 2 **N**-Neutral= 3, **A**-Agree= 4 **SA**-Strongly Agree = 5

| | STATEMENT | SD | D | N | A | SA |
|---|---|---|---|---|---|---|
| 1 | Our organization Efficiency in serving clients has improved with adoption of technologies | | | | | |
| 2 | We serve our customers in a timely manner aided by digital technologies | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | Our customers are served at their Convenience with digital technologies like cashless system | | | | | |
| 4 | The Quality of services has improved greatly with adoption of digital technologies | | | | | |
| 5 | The Speed of service delivery has improved greatly with adoption of digital technologies | | | | | |