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Evaluation of E-Procurement System Service In Ministry Of Health: A Case of Murang'a County government.

By

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DECLARATION

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

Signature: _____ Date: _____

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This proposal has been submitted for review with my approval as the university supervisor.

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MR. MOTURI

DEDICATION

This research project is dedicated to my mum and mu who positive friend who positively supported the endeavor, and to John for his interest, patience and inspiration throughout the project.

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ABSTRACT

Background

Assessing the quality of e-services has now become an interesting area of study. In the past, many issues resulting from system misuse to achieve selfish motives have been recorded. This has resulted to misuse of public funds by specific individuals.

Problem

The procurement process have had challenges due to many factors among them manipulation of the e-procurement system. This system manipulation has necessitated a lot of public money to get lost in the hands of specific individuals. In the long run, development projects lag behind.

Purpose

This research is intended to assess the e-service quality of E-procurement system in Murang'a County using E-S-QUAL and E-RecS-QUAL scales.

Methodology

E-S-QUAL and E-RecS-QUAL scales are used to measure the quality of e-services. In this research, they were first adjusted and adopted to explore the various dimensions that have an effect on the overall customers' perceptions of the E-procurement system in place.104 valid questionnaire answers were taken. The questionnaire was structured such that there were 250 structured questions which were given to the various stakeholders of the E-procurement system. At first, operationalization of the used scales was done. A correlation and factor analysis was done followed by multiple regression analysis to the E-S-QUAL and E-ReS-Qual scales.

Findings

Based on the results, there is a strong positive correlation between the overall perception of customers and the E-procurement system. The dimension with the greatest impact is the 'system efficiency, privacy and finally contact. The E-procurement system scored 3.001 from the 5-point scale in performing quality E-services and a score of 2.764 in E-service quality recovery.

Limitations

The biggest limitation of the study was the fact that it is barely 3 years since the launch of system use in county government so the sample size was limited to a given population.

Value of Study

The study is of value to policy makers as issues raised will act as a basis of formulating policies that will aid in system improvement.

Conclusion

From the results, it implies that the Eprocurement services offered by the system are not satisfactory to the users. Therefore, the management should consistently work on privacy, system responsiveness and system availability issues.

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DEFINITIONS

E-Procurement -Electronic procurement is the procurement of electronic procurement functions, especially on the Internet.

Procurement - A business function that involves all the activities in acquiring goods & services as well as managing the entry into an organization.

SERVPERF - Model used for evaluating the service quality, based solely on effective performance of a service.

SERVQUAL – A model used to evaluate service quality, based on difference between clients' expectations & the actual performance of a service.

E-S-QUAL- is a Multiple-Item Scale for used to Assess the E-Service Quality and measures four dimensions of quality of an electronic service.

E-RecS-QUAL –It is used to find out recovery issues of a customer service by use of a separate scale.

ABBREVIATIONS

EDI   Electronic Data Interchange

ERP   Enterprise Resource planning

ICT   Information, Communication and Technology

IFMIS   Integrated Financial Management Information Systems

IT   Information Technology

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This part of the thesis contains the related information, statement of the problem, project purpose, objectives, implications, assumptions, and research limitations.

1.1   Background Information

The most effective strategy for monitoring the disproportionate impact of anomalies pertaining to an open invitation to tender has been largely curtailed through implementing IFMIS in developing countries. It has characterized public institutions for many decades (Kihara 2009). Kimwele (2011) explains that IFMIS increases the oversight, supervision, and transparency of public sector receipts and expenditure. This improves the ability to access essential organizational and financial performance data, necessitating quick access to state cash position information, as well as economic performance information.

Jobe (2009) indicates that IFMIS is crucial because it necessitates demonstration accountability to the public and donors. From a global perspective, IFMIS has presented complex implementation challenges. Nonetheless, it is increasingly becoming an important component and a driver of reforms of the financial sector in public institutions in both developing and developed countries (Chêne, 2009). World Bank reported that in 2005 alone, it financed IFMIS projects in at least 27 countries whose estimated cost was $1.1 billion (Miranda & Keefe, 2008). It points out that in the process of support the project across the globe, the World Bank has noted that IFMIS implementation is tough for developing economies. The process has not yielded success (Kanyugi, 2014).

Despite the challenges and many failed trials to implement IFMIS across the globe, there are numerous cases of success where implementation was very smooth. The Republic of Slovakia is cited repeatedly for the rapid success of IFMIS implementation. The success is attributed to a strong backing of strong political will and parliamentary commitment that was a strong driving force in the effort to realize governance transformation. The political willingness was pushed by the desire to comply with the EU required changes.

According to GoK (2015), the Kenya National Government (KNG) is mandated by the constitution to protect and safeguard the safety and wellbeing of Kenyans. The government is split into national and county governments. Irrespective of the level of governance, Mutui (2014) explains that both levels of governance are split into economic and administrative structures, which are managed jointly. GoK (2015) explains that GoK does not only focus on the efficacy and efficacious of open tender procedure, but has the responsibility of ensuring accountability, transparency, and interactive access to information about public expenditure. All these are done to improve public service delivery.

Hendriks (2012) explains that IFMIS is system programmed to track all the financial transactions. Besides summarizing financial information, IFMIS supports adequate policy decisions, management reporting, preparation of financial statements, as well as fiduciary responsibilities. GoK (2015) further explains that IFMIS is the computerization of state financial management processes ranging from preparation of budgets to execution. It integrates all the processes of financial management in the government operations sphere (RoK, 2011).

The Ministry of Health, one of the ministries under the Kenyan National Government, is currently headed by Sicily Kanini Kariuki who is the Cabinet Secretary. The ministry is mandated to develop policies designed to provide high quality and affordable healthcare for people in Kenya.

Additionally, it is responsible for amongst other functions, the development of competent, and motivated work-force of medical professionals, and the ability to respond adequately to public health-related issues and emergencies. The ministry has a procurement department tasked with a key responsibility of ensuring the proper utilization of resources allocated to the ministry.

1.2   Problem statement

The GoK indicated that all its ministries have a fully functioning IFMIS system, yet irregularities in the utilization of public resources are still rampant. 2016 witnessed some of the major corruption scandals in Kenya's history. A common phenomenon in all the scandals was billions of shillings were stolen through the IFMIS system. In 2016 more than Ksh. 1billion was stolen through manipulation of the IFMIS system in what was commonly popularly known as the National Youth Service (NYS) scandal.

Similarly, some senior officials in the Ministry of Health masterminded misappropriation of sh. 5.5 billion in what was called the Afya House Scandal (Guguyu, 2017). A report published reveals that senior officials in one of the agencies in the Ministry of Health made efforts to steal Sh. 30 million through manipulation of IFMIS (Leftie, 2016). The report further indicates that the theft attempt was made in May 2016 but it was detected and stopped at the last minute as senior accounting officials prepared payment for the non-existent supplies.

A report published by Kenyan's Ethics and Anti-Corruption Commission on 26th October 2016 reported that top officials in the Ministry of Health were able to steal more than 5 billion shillings through a mega-scandal involving funds theft, double payment for goods procured through IFMIS abuse. County governments have not been spared either. Kamau (2016) explains that the Auditor-General 2016 report indicated that at least 24 Kenyan counties could not be able to give an account for about sh. 140 billion received from the national treasury. Kilifi County Government alone could not account for sh. 90 million. The auditor issued adverse reports on Kakamega and Kirinyaga Counties. Besides the missing millions, the auditor could not establish the whereabouts of assets worth sh. 26 billion in the 24 counties. Furthermore, the counties owed suppliers more than sh. 5 billion (Kamau, 2016). More and more public resources were being lost through the manipulation of the e-procurement system. Why is this happening?

1.2.1 Purpose of the project
The researcher aims to analyze the reliability of IFMIS system performance in the procurement process because of this existing problem. It is troubling to note that state and most county ministries have fully implemented the IFMIS system yet billions of taxpayers' money continues to be stolen through manipulation of the IFMIS system. To what extent does IFMIS fulfill its role of ensuring transparency, accountability, and efficient use of public resources? What should be done to ensure that the IFMIS system functions effectively?

1.3 Objectives of the study
This study was guided by;

1.3.1 General Objective
The main aim of this study was to evaluate quality of electronic procurement service in the County government.

1.3.2 Specific objectives

1. To determine the e-procurement system service quality.

2. To determine issues leading the system manipulation.

3. To propose guidelines that will help enhance system quality.

1.4 Research questions

1. How to determine the E-procurement system service quality?

2. Which level of quality is the E-procurement system?

3. Which factors make the system to be prone to manipulation?

1.5 Significance of the study

Some beneficiaries of this research will largely constitute the following.

1. The Government will be able to know where to commit more resources in its strategic plan in an attempt to improve the e-procurement services.

2. Government agencies will be able to adopt e-procurement systems in their procurement operations.

3. Policymakers will be in a position to make and amend policies that are in tandem with the big 4 agenda.

4. Academicians will acquire and further this inquiry as they seek to do research related to this subject.

1.6 Assumptions and limitations of this research

The self-selected participants of the survey were representative samples of e-procurement system users. The research focused on the respondents ' expectations and presumption of their truthfulness in self-reporting regarding their actions in the use of e-procurement.

CHAPTER TWO

LITERATURE REVIEW

This chapter covers theories, empirical studies and study gap.

2.1 Theoretical Review

2.1.1 User satisfaction and system quality

Working attitudes create both behavioral experience and a mental dimension that closely links service quality with satisfaction (Yang & Peterson, 2004). In different circumstances, end users utilizing the e-services may be discontented due to technological failure, resulting in poor acuity of the quality inherent in the function of the service. Frustration can be triggered by issues with software development or inherent systemic system layout hitches. It occurs when the systems are sluggish due to erratic network connections, glitches with accessing navigation on the system or even hindrances caused by inability of the end users switching off from system service. (Meuter, et al., 2000).

A service's perceived quality constitute of technical and operational dimension: technical dimension denotes what is delivered whilst operational dimension refers to provision of service. The responsiveness of the service system, system upgrades offered, efficacy of the system and so forth are referred to as qualities of the technical system service. The operational dimension of value applies to digital connectivity, communication and service personalization along with access to end user in varied ways. (Rust & Lemon, 2009).

The content provided by the website to the end users shapes their perception of the product/service quality (Park & Kim, 2003). …. The digital consumer confidence is founded on the reliability of the web application in providing information real time (Mcknight et al., 2002).

Responsiveness is an important factor in accepting and using e-services by customers. Customers need to experience and recognize any e-application's advantages; otherwise they are wary and suspicious about using it. The important impact that any application can have is dependent on the awareness that the customer has about such online applications (Pikkarainen et al. 2004).

2.1.2 Dimensions to measure the level of quality of a system

Different aspects of Information systems can be evaluated using different and numerous methods in assessing its success. Notwithstanding other views, there are two focal point of views namely; organizational and socio-technical point of view. There is emphasis placed on information provided by the information systems and interaction with the end users even though this view is reproved for people centered. On the contrary, the aspect that deals with social technical approaches mainly focuses on individual requirements (Aggelidis & Chatzoglou, 2012).

The six dimensions of success model viz: system, information, service, usage of information, satisfaction of users and both organizational and individual net benefits that accrues as identified by IS success model integrate with perceptions of both social technical and organizational views (Ngai & Cheng, 2002).

The achievement of an information system is largely dependent on the measurement of its quality dimension. So as to achieve grasp the performance of an IS, DeLone & Mclean IS success model is commonly applied. That is to say, assessment of an IS is done through valuating the system qualities along net benefits, usage necessitated by satisfaction of the user of the information (Bossen et al., 2013).

One of the most comprehensive dimension used in measuring the evaluation of an IS system is the user satisfaction as depicted on the McLean and DeLone IS model. User satisfaction has a vibrant outcome on the computer usage behavior of users hence influencing the usage of the IS system (Gürsel et al., 2014). In regard to an IS system to do well, assessment on the user satisfaction can really go a long way. Miscalculating the end users' perceptions can reflect badly on the newly launched IS system. Bossen et al., (2013) asserts that some of the causes of failure especially in hospital IS is largely due to not taking the perceptions of end users seriously.

Aggelidis and Chatzouglou (2012) combined independent variables called accuracy, content, design, and eccentricity around different variable, info quality that is ranked highly. On the part of system quality, credentials, system clock acceleration, instruction and usage expediency were gathered. Grounded on these investigations, they described both info and system quality as two devised factors had a helpful influence on users' fulfillment. The fulfilment of workstation users

is largely firmed through undertaking perceptive and sensory measurements of users' familiarity whilst utilizing the accessible services (Gürsel et al., 2014).

Usableness of an IS user interface is a critical factor in communication between humans and computers; in addition, data reliability, clear screen presentation and prompt messaging, error handling are critical factors to be considered (Lacramioara & Vasile, 2006). Satisfaction derived from information usage is commonly used as a pointer of users ' perception of an information system's efficiency that is usually related to other central system design and analysis components (Aggelidis & Chatzoglou, 2012).

2.1.3 System manipulation

Some theoretical corruption drivers has been considered and attributed to in related literature (Acemoglu and Verdier 2000, Burguet and Che 2004), although less empirical studies are available due to scarcity of relevant data and the opaque nature of fraud. In light of these difficulties, policy reforms have been used to evaluate corruption as indicated in the empirical literature, field experiments and Big data analysis has been used to a large samples of administrative data (Bandiera et al., 2009).

No prior inquiry has been undertaken in regard to the effect of procurement thresholds that decide the contract award format on corrupted procurement officers, except for the previous work that led to this paper (Palguta 2013, 2014). Spagnolo and Giancarlo (2012) and Coviello and Mariniello (2014) analyzed the impact on the economic outcomes of procurement of reduced transparency requirements and increased discretion below thresholds. Several other studies have documented manipulative behavior in other areas of the economy generated by non-linear threshold incentives (Camacho and Conover 2011).

There is hardly any general evidence available on procurement officials' corrupt behavior. Many studies that are empirical in nature concentrate more on bidders' complicity (Bajari & Summers, 2002). The only studies done by (Hyytinen et al., 2007) and (Goldman et al., 2012), analyzed procurement favoritism and bribery by the officials in different procuring entities. While these investigations give significant bits of knowledge into staffs' inspirations, they generally disregard the motivations got from the non-linear procurement administrative structure.

2.1.4 System level of quality

Quality can be a confusing concept in part because people perceive quality based on their individual positions in the value chain of production-marketing in relation to different criteria. Internal quality delivery of service is accomplished by embedding a fundamental philosophy throughout the company which serves as a foundation for assuming value from design to customer, with this in mind everyone in the organization recognizes that whatever they do will please their customers (Atkins et al., 2007).

Success theory propositions of IS states that both system and info quality marks end user usage and fulfillment with info systems, additionally defining organizational performance (DeLone & McLean, 2011). This IS success model asserts that net benefits accrues as a result of continual satisfaction on the part of end users as a consequence of utilizing the qualities of the system, information and service offered by the system. This in turn increases the knowledge and lowering costs of the organization (DeLone and McLean, 2011). Rai, Lang and Welker (2012) anticipated that both qualities of the info and system have a bearing on the end users satisfaction and hence affect the social aspects in networking within the communities.

2.2 Service Quality Evaluation Models

2.2.1 The SERVQUAL Model

The SERVQUAL instrument was established to be used in countless service quality studies. This is due to its standard framework for service and it is a practical approach of the field (Parasuraman et al. 1991).

So as to achieve customers' preference and attitudes, SERVQUAL instrument has got 22 statements that determine service's performance. The respondent is asked on a Likert Scale based on 7 point to facilitate the scoring level of interaction with the questions highlighted. The perceptions of consumers are set up on certain service they get, whilst the prospects of clients are anchored through past experience and received information. The questions reflect quality of service elements or measurements. The enhanced research minimised the original measurements of service from ten to five as used by clients in assessing the quality of a service.

Parasuraman et al., 1991 identified the dimensions as follows: Assurance – employees ' competence and courteousness and capability to carry confidence and respect; Empathy – loving,

individualized customer attention; Reliability – capacity to provide the assured service in a reliable and accurate manner; Receptiveness – the desire to relief clients and offer apt service; Tangibles – presence of physical structures, equipment, staff and resources for communication.

Some of the objective of SERVQUAL instruments is to determine the level of service quality based on 5 main dimensions and to decide where and to what extent there are service gaps.

The following are the gaps as enumerated by the researcher: Position refers to managers ' discernments of consumer preferences and status users attribute in performance areas; Specification refers to discrepancy amid whatever administration thinks the customer needs and what clients assume the company will deliver; Delivery – concerns the disparity amongst the service delivered by the member of staff in relation to the requirements laid down by the organization; Communication occurs when there are discrepancies between the promises made by the organization and clients expectation; Perception is the variance concerning certain inner acuities of consumers and service outlooks (Parasuraman et al., 1991).

2.2.2 The SERVPERF Model

While there are other studies that failed to match 5 distinct dimensions and validity of SERVQUAL (Carman, 1990). Some of the researchers who are big and strongest criticism of the SERVQUAL scale are Cronin and Taylor (1992) who also came up with SERVPERF. They disagreed with gap theory on the grounds of no evidence done through either theoretical or no empirical studies.

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┌─────────────────────┐                    ┌─────────────────────┐
│  SERVICE QUALITY    │─────────────────▶  │   SATISFACTION      │
└─────────────────────┘                    └─────────────────────┘
           │                                          ▲
           │                ┌──────────────┐          │
           └───────────────▶│    VALUE     │──────────┘
                            └──────────────┘
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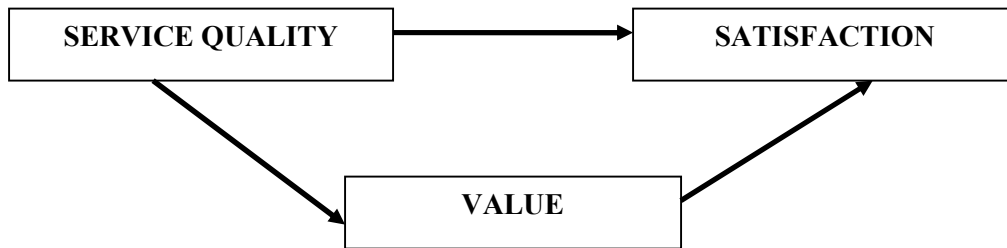
Figure 2.1: Perceived Service Value as a mediating variable

The SERVPERF scale which was fronted by Cronin and Taylor in 1992 was based on unweighted performance based method of gauging service quality. Depending on business type, accuracy of this scale ranged from 0.884 to 0.964 and demonstrated equal validity of convergence and selection. The debate between SERVQUAL and SERVPERF is still ongoing.

The creation of an assessment of service quality metric that is performance-based was named as SERVPERF as a result of objections and disputes on the SERVQUAL scale (Cronin and Taylor, 1992).

The excluded 22 SERVQUAL scale anticipation elements aren't part of the SERVQUAL scale interpretation. SERVPERF has grander projecting power than the scale of SERVQUAL when the 4 service industries like banking, pest control, dry cleaning, and fast food are subjected under a test.

Cronin and Taylor's (1992) published results that prompted some researchers to have comparable conclusions about dominance of performance methods, studies uphold that discernment scores couldn't explicate the level of service quality because of expected service ratings, memory, may be skewed by actual services provided and may not correctly measure performance (Cronin and Taylor, 1994). More specifically, findings of Subramaniam and Shaw (2002) suggest that the SERVQUAL scale expectation portion adds "no additional information" past what is derived since performance perceptions alone. Even Zeithaml (one of the developers of the SERVQUAL scale) earlier described that only performance expectations straight affect service quality (Bai et al., 2008).

Because service quality features are not supposed to be correspondingly significant athwart service industries, it's been proposed that the service quality assessment scales should include appropriate weights (Cronin and Taylor, 1992; Parasuraman et al., 1991). The 2 scale version amongst theoretically specified weighted SERVPERF scale was superior to the weighted SERVQUAL scale. Cronin & Taylor (1992) recognized 4 crucial formulae which condensed

SERVQUAL, SERVPERF and the weighted versions of both scales as follows: SERVQUAL = Performance – Expectations; Weighted SERVQUAL = Importance x (performance – expectations); SERVPERF = performance; and Weighted SERFPERF = Importance x (performance).

2.3 E-services quality model

E-service quality is well-defined as an overall client evaluation and conviction of virtual marketplace electronic service delivery (Santos, 2003). Experienced businesses with success in delivering electronic services are alive to this fact, apart from availability of the website and the little price, imperative factors of achievement or failure comprises reliability of service digital (Yang, 2001; Zeithaml, 2002). The fundamental aim why electronic service quality is relevant is that consumers can assess Internet-based services more easily and accurately than conventional services (Santos, 2003). Online service customers expect a level of quality service higher than or equivalent to conventional service customers (Santos, 2003).

2.3.1 DeLone and McLean model

The importance of measuring the achievement of info systems as this will contribute towards our understanding of what value IS administration activities and IS reserves bring DeLone and McLean (2003).

The theory composition is spelt out on six dimensions of success qualities of info, service and system, usage, end-user satisfaction, net benefits. The six dimensions of success are interrelated as opposed to being independent. There is an updated DeLone and McLean model, (Urbach and Muller, 2012) emphasizes that it makes the updated model different from the original model is the incorporation of service quality.

Gichoya (2005) supports the DeLone and McLean model through a research framework which shows a causal relationship of how ICT facilities quality and Information System quality are affected by successful ICT implementation thereby the perceived benefits being affected by the quality of ICT facilities and IS. Perceived benefits are used to assess and measure the achievement of ICT ventures.

2.3.2 E-S-QUAL and e-RecS-QUAL

E-S-Qual is comparable to the measure of SERVQUAL, created to scale the quality of electronic services. Parasuraman, Zeithaml and Malhotra introduced this model in 2000 and tested and revised it in 2005. A qualitative study was initially performed by Zeithaml et al., 2000 in each group consisting of seven to six focus group discussions. They then claim that focus group discussion answers to dimensions of e-service quality (e-SQ) were unusually dependable athwart the clusters, know-how levels, and electronic service dealings deliberated.

Zeithaml et al., 2000 asserts that the focus clusters demonstrated consumers practice substantially alike dimensions to assess e-SQ depending on the form of service that is examined on Cyberspace. Dimensions created are Consistency, Receptiveness, Admittance, Elasticity, Navigation Facility, Performance, Assurance/Trust, Security/Privacy, Price Awareness, Site look and feel, Customization. Web site attribute set relevant to these 11 dimensions acted as the e-SQ sphere since which objects were drawn for the e-SQ scale.

The items were additionally analyzed in order to establish an electronic core quality service (E-S-QUAL) scale. This procedure culminated in the ending E-S-QUAL Scale, entailing of 22 4 dimensional objects branded and specified: reliability — simplicity and rapidity of access and use of the website success — degree in which the promises made by the website concerning the provision of instructions and the accessibility of items are met; system accessibility — the website's proper technical operational; and privacy — degree to which website is secure and has data privacy.

Some things previously put aside were subsequently evaluated for the development of a scale to assess sites' performance of service recovery. Succeeding the equivalent process used in the development of E-S-QUAL, an e-recovery service quality scale (ERecSQUAL) was formed containing of 11 three-dimensional items: receptiveness — Operative site handling technical errors; Recompense — degree in which the company rewards consumers for hitches; and Communication — the provision of handset or digital reps assistance.

Therefore, the E-S-QUAL and e-RecS-QUAL scales proposed by Parasuraman et al. (2005) comprise of subsequent 7 dimensions: usability (easily accessing and surfing the website); Completion (keeping promises on distribution of orders and obtainability of items); reliability of

the system (proper usage of the website); confidentiality (secure website, data privacy); Responsiveness (operative management of hitches); compensation (website rewards clients for glitches); and contact (phone or connected support).

The initial 4 dimensions institute "heart" performance (e-S-QUAL scale), while the latter 3 (e-RecS-QUAL scale) instituted "recovery" quality. E-S-QUAL (and E-RecS-QUAL) intended exclusively to quantify the value of operation of websites. Some pragmatic factors like enjoyment or preference don't come from the theoretical scope of quality of service because such hedonic features are dissimilar advantages which aren't applicable to consumers (Parashuraman et al., 2005). Digital companies ought to relate both scales and show the general expectations of the e-SQ of consumers. Inclinations in dimensional- and attribute-level scores since monitoring studies, according to Parashuraman et al. (2005), the powers and faults of websites and recommend thoughts for enhancement.

2.4 Research hypothesis and model

Chang et al. (2009) notes that qualities of e-service had an encouraging impression on client gratification towards effort to generate an exemplary link that displays amongst service quality, client gratification and client fidelity. Chen and Hitt (2002) found that customer switching and retention were minimized by precise quality factors of e-service quality. When studying e-service quality, electronic punter consummation, supposed worth and allegiance, Wenying and Sun (2010) showed that e-service quality has a optimistic influence on consumer approval, apparent worth and electronic trustworthiness.

Investigations by Sun et al. (2009) showed client contentment and apparent importance are inclined by dimensions of electronic quality service. The positive special effects of electronic service quality on client approval were evidenced in lending (Al-Hawari & Ward 2006). Research has shown quality of e-service dimensions have a straight impact on client gratification (Yen and Lu, 2008; Kassim and Abdullah, 2010).

It is proposed that e-service quality dimensions are directly related to the global awareness of electronic service quality by the customer grounded on all of the above studies. Specifically, it is assumed that:

H1: Efficiency positively influences users' overall perception of IFMIS system

H2: System availability positively influences users' overall perception of e-service quality

H3: Fulfillment positively influences users' overall perception of e-service quality

H4: Privacy positively influences users' overall perception of e-service quality

H5: Responsiveness positively influences users' overall perception of e-service quality

H6: Compensation positively influences user's overall perception of e-service quality

H7: Contact positively influences users' overall perception of e-service quality

The scales E-S-QUAL and E-RecS-QUAL developed by Parasuraman et al. are used in this research. All the dimensions comprised in the essential inquiry will be defined and utilized as per Parasuraman, et al., (2005) analysis.

2.5 Empirical Analysis

By initiating and trying systematic ideal for assessing consumer gratification on 5 Flemish electronic government sites that tested an end user-centered electronic government in practice (Verdegem and Verleye 2009). In order to expand the model and devise appropriate metrics for assessing user satisfaction, both quantitative and qualitative studies have been performed. The research was concluded with nine satisfaction determinants: infrastructure, accessibility, knowledge, price, technical features, client friendliness and quality. The items enlisted here as determinants of satisfaction, e-government providers could get a clear view of users ' acceptance of their internet services.

Lee et al. (2009) examined digital customer satisfaction research (known as e-Satisfaction) and e-commerce repurchases activity. In order to decipher how e-Satisfaction is fashioned, they tried to develop a conceptual model. In addition, they explored how human computer-related alterations such as computer self-efficiency and computer anxiety influence this development. The analysis brought about from a survey of virtual customers signifying that satisfaction with site content, system fulfilment, and total quality of e-service play key roles in e-satisfaction.

The result of e-Service Quality (e-SQ) on e-Customer contentment (e-CS) was examined by Zavareh et al. (2012). E-SQ and e-CS primary data were collected from 392 online internet banking users, reflecting reply rates of 76 percent, from four major banks in Iran. The result

showed that for internet banking services in Iran, proficient and steadfast services, compliance, safety / trust, site aesthetics, receptiveness / contact, and effortlessness of use are e-SQ. There is a noteworthy optimistic relationship in internet banking amongst e-SQ and e-CSI. The regression analysis executed revealed that on e-CS, safety / trust, page usability, and effortlessness of use of online banking have optimistic impacts.

The performance of e-government service was evaluated by Papadomichelaki and Mentzas (2012). In this inquiry, an e-GovQual is theorized and a multi-item scale is established, advanced, validated, confirmed and tested to amount the quality of e-Government service on government websites where peoples pursue information or service. Four dimensions are used within e-GovQual: trustworthiness, performance, national care, and trust. The study concluded by defining the value factors that will impact national experience that can be used to better comprehend user criteria, assist in government implementation to the needs of citizens ' programs, concentrate testing activities, and assess possible changes to existing website designs and operations on the e-government.

In the light of these tests, Parasuraman et al. 2005 asserts that this research attempts to take another step in evaluating the quality of electronic service founded on the E-S-QUAL and E-RecS-QUAL scales. This study reevaluates the applicability of the scales in non-retail setting like digital monetary services based on their conceptualization and the analysis instrument. Although Parasuraman et al. (2005) extend their electronic service value scales to online retail firms, the research in this document adjusts their scales to internet business services, for instance, less tangible online banking, which is the key difference between products and services in the tangible continuum (Chen and Hitt, 2002).

This issue is also highlighted in the previous study as "a significant research precedence is to scrutinize the scales of websites, adjust any essential amendments and evaluate the psychometric properties of revised scales." (Parasuraman et al., 2005: 229); and offers a complete psychometric assessment of E-RecS-QUAL with a plentiful higher sample scope than the original work. Parasuraman et al. (2005: 229) assures the necessity for this question, "Nonetheless, the E-RecS-QUAL Scale is accessible as an initial scale since samples of clients with recovery-service involvement at later scale test websites did not permit a thorough psychometric valuation of that level."

E-S-QUAL and E-RecS-QUAL has remained pragmatic in a diversity of automated service like an online Spanish supermarket, internet banking in Turkey, virtual shopping, book stores, grocery sites, social commerce, microblogging sites, and diverse geographical and cultural environments as well as online shopping involvements of African American and Chinese customers (Kandulapati & Bellamkonda, 2014: Akinci et al., 2010: Marimon et al., 2010: Rafiq et al., 2012: Boshoff, 2007: Lee et al., 2012 and Hu et al., 2012, Meng & Mummalaneni, 2010). A detailed reviewed literature on E-S-QUAL established out that E-S-QUAL relates to different e-service industries in 11 nations; conversely, the fulfillment dimension tends to be unique to websites that offer physical products, whilst other 3 dimensions are dependable in the different service settings. Boshoff (2007) found a diverse aspect of E-SQUAL, namely dependability with two sub-dimensions: confidence and admittance. The researcher proposed the dimensionality of the E-S-QUAL information of their studies should be reassessed.

In short, electronic service quality research relating SERVQUAL and emerging instruments specify electronic services required diverse dimensions to extent their quality than services delivered offline. In regard to inquiry methods, what was done is mainly concentrate on group meetings with specialists, worker surveys, and Delphi method to recognize applicable items for their exact services; functional factor analysis to slim the array of items to discover vital dimensions and to care validity; and examined relations amongst factors by the structural equation model. Nevertheless, validation issues continue with around lesser sample sizes, and prejudiced structure for surveys and discussions.

The research disclose an overall agreement that virtual environment is diverse on an outdated retail context in footings of suitability, effectiveness, privacy, concealment, and lack of face-to-face contact (Ladhari, 2010). Previous works must come up with scales in online trading (Loiacono et al., 2002; Barnes & Vidgen, 2002; Wolfinbarger & Gilly, 2003; Parasuraman et al., 2005) and internet banking (Yang et al., 2004) signifying that dissimilar standards are required. Yet, there are mutual dimensions such as consistency/contentment, receptiveness, web usability/design, easiness of use, confidentiality/safety, info quality/value (Ladhari, 2010).

2.6 Conclusion on e service model

E-S-QUAL and E-RecS-QUAL scales are preferred as intent of this investigation is to study the dimensions affecting the general notions of e-procurement system for e-service quality of

consumers. As proposed by Parashuraman et al. (2005), the E-S-QUAL and E-RecSQUAL scales show decent psychometric properties and should only be used to the extent quality of the website's service. Fun or pleasure is not part of my research as it may not be created for all customers.

2.7 Conceptual model

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                                            ┌─────────────────────┐
                                            │  System  Efficiency │
                         ┌──────────────┐   └─────────────────────┘
                         │              │   ┌─────────────────────┐
                         │ E-S-Qual Scale│◄──│ System Availability │
                         │              │   └─────────────────────┘
                         └──────────────┘   ┌─────────────────────┐
  ┌──────────────┐                          │       Privacy       │
  │ Perceived e- │                          └─────────────────────┘
  │service quality│                          ┌─────────────────────┐
  └──────────────┘                          │     Fulfillment     │
                                            └─────────────────────┘

                         ┌──────────────┐   ┌─────────────────────┐
                         │ E-Recs-Qual  │◄──│   Responsiveness    │
                         │ Scale        │   └─────────────────────┘
                         └──────────────┘   ┌─────────────────────┐
                                            │    Compensation     │
                                            └─────────────────────┘
                                            ┌─────────────────────┐
                                            │      Contact        │
                                            └─────────────────────┘
```
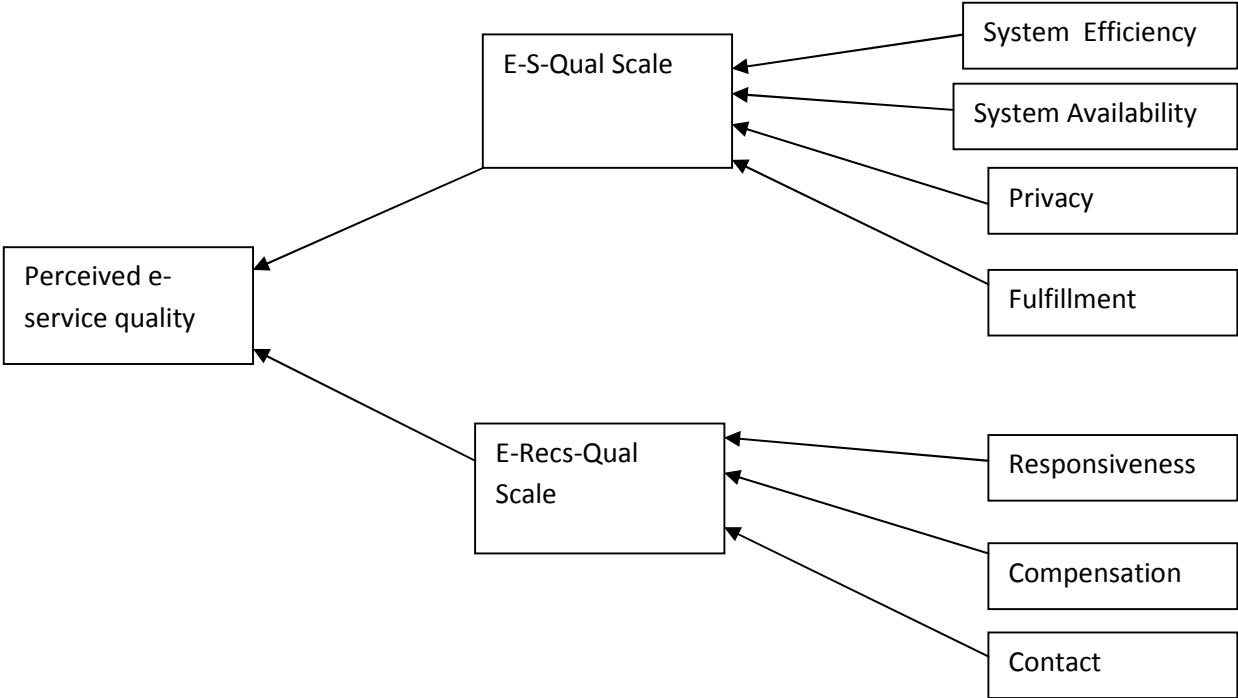
Source: *A model of measuring procurement service (Adapted from parasuraman et.,al 2000 and 2002)*

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter entails the research design, data collection methods, data analysis methods, validity testing and ethical considerations..

3.1   Research Design

Kothari (2004) states that research design entails analysis and collection of data in a structural and conceptual way. In short, it is the analysis and measurement of data collected. Decisions are arrived at through a planned process that involves analyzing the collected data.

The study followed a descriptive research design as the analysis aims to provide definitive data from the specific cause of action that has been established; this involved gathered information to arrive at varied opinions on how e-procurement process is achieved. A descriptive research allowed the elements to be analyzed in their natural form without altering them.

3.2   Sampling design

3.2.1 Sample frame

The study targeted users that interact with the E-procurement system directly in the county government. They include Suppliers, Auditors, Finance, Regulators, ICT department, National treasury, Employee.

3.2.2 The Sampling method

According to Kothari (2004), a sample is deduced from a number of items collected from the universe and the optimal sample size should not be small or large. This research involved stratifying the selection of people using the e-procurement process. The population is divided into separate groups with stratified sampling also known as strata. A simple random sample is drawn after each group (Tamhane, 2008). While using sample random sampling there is less statistical accuracy as opposed to when using stratified sampling. This is because, when interacting with the whole population at large, the variance within the subgroups is smaller than the differences.

3.2.3 Sample population and sample size

A population inference is made on a sample size from any empirical study. Hence, statistical power is derived at when sufficient data collected is determined by the samples size (Singh & Masuku, 2014). The collect data sample was largely drawn for the target population that involved suppliers, auditors, policymakers, finance, the national treasury, ICT department, e-procurement staff, among others.

3.3   Development of the Survey Instrument

In the case of this study, self-administered and structured questionnaire were the collection tool since their advantages were identified in reviewed literature that included the following:

a) The tool easily provides for the quantifiable information required for structural equation modeling as was required in this study.

b) When a study has identified the variables to be measured, the best tool to be deployed is that of structured questionnaire since its very efficient and effective. In agreement with this, Sekaran (2003) asserts that questionnaires are often used in the field when there are variables of interest.

c) It is less costly when administering a questionnaire to a larger respondent simultaneously compared to conducting interviews. This is due to the fact that it does not require lots of time or specialized skill (Mugenda 2008).

3.4   Questionnaire Design Steps

A printed questionnaire was the survey instrument in this study designed to take into account the presentation and formatting recommendations contained in the literature that enhance readability and understandability. This means that a conscious effort is made to keep the questions simple, easy to read, and unambiguous thereby minimizing the chance of misunderstanding or misinterpretation of the questions by the respondents. This was to prompt higher survey response rates and hence meet the intended survey objectives (Kitchenham & Pfleeger 2002).

As recommended in the cited literature touching on this subject, the following steps were followed during the questionnaire design phase:

i) First and most important, the study objectives were formulated and discussed with research experts to ensure their clarity, and that their capacity to fully address the identified research questions.

ii) A comprehensive review of existing electronic service quality literature was carried out to guide the designing of the conceptual model, along with the selection of suitable constructs and indicators for the model. Knowledge of how the questions for measuring these indicators were formulated in the past, including the choice of appropriate phrasing, was gained.

iii) An adequate number of measurement items were selected to ensure that the meaning of each construct was fully captured as conceptualized.

iv) Expert opinions and feedback were sought throughout this phase from stakeholders involved in the design, implementation, and use of E-procurement in Kenya, as well as from academic researchers who have undertaken user acceptance studies in the past.

v) A qualitative pre-study was undertaken to check the research model in relation to the construct's appropriateness. This provided insight into the selection of the corresponding measurement items and subsequently the design of the questionnaire.

vi) Finally, a pilot phase of the study was ascertained in assessing psychometric properties that measured the indicator obtained through use of the questionnaire. Additionally, focus group discussion with the pilot teams pinpointed specific items in the questionnaire that required to be modified.

3.4.1 Final Instrument Layout

The final questionnaire of the survey consisted of five pages, the first page sought to elaborate survey intentions and ultimately welcoming participants to complete the survey. The letter assured survey participants of the confidentiality of the data gathered that their contribution to the survey was entirely voluntary. The Appendix contains a copy of the questionnaire.

The survey consisted of three segments:

User demographics: gender, age, position in the organization, and education related to the questions in this section.

E-S-QUAL scale was rated using a 5-point scale (1 = strongly disagree, 5 = strongly agree) that allowed the respondents to rate the e-procurement system's performance on each scale. The items below are grouped by dimension for expositional convenience namely, Efficiency - 4 items, System availability - 4 items, Fulfillment - 4 items, and Privacy - 3 items.

E-RecS-QUAL scale: Respondents will rate the system performance on each scale item using a 5-point scale (1 = strongly disagree, 5 = strongly agree). The items below are grouped by dimension for expositional convenience namely, Responsiveness - 2 items Compensation-2 items and Contact – 3 items.

E-S-QUAL is considered a quality scale of e-core service, while E-RecS-QUAL is the recovery scale of e-service quality. It is used to evaluate the quality of e-service when its problematic in offering customer care service.

Qualitative data section-where users whether asked to fill in any other opinion/view they have that had not been captured in the qualitative data section.

3.5   Constructs Operationalization and Measurement Scale Development

The constructs or latent variables used in developing the study model are abstractions that cannot be observed directly (Gay et al. 2006). Hence the variables had to be operationalized to render them measurable by assessing behavioral properties making up individual construct. A standardized conceptual measure was developed to translate both observable and measurable elements.

Most of the questions for collecting the manifest variables data were adapted from the tool developed by Parashuraman et al. (2005) but edited to match the context of the use of Eprocurement in Kenya. Parashuraman et al. (2005) had already specified E-S Qual and E-recS-Qual model in deriving operational definitions in some of the core constructs in the study. The Likert scale, which is an ordinal scale, was used for most of the questions that served as measurement indicators for the conceptual model's constructs. This study employed the five-point rating scale as it has been used very frequently in electronic service models (E-S Qual & E-recS-Qual).

The table below represents constructs model and definitions, their corresponding measurement items as used in this study; and the literature references that informed their operationalization. A note of the measurement scale used for each construct's items is given at the bottom of the table. Most of the indicators were operationalized based on definitions by Parashuraman et al but adapted to fit the local setting.

Table 3.1 Constructs Operationalization and Measurement Scale Development

Attribute	Constructs	Description	Metric
Efficiency	Site accessibility Navigation Site speed Information organization	EFF1: Customers are able to get what they need in the site. EFF2: Navigation around the site is easy. EFF3: Transactions completion is easy. EFF4: Organization of information is top notch. EFF5: Page loading is quick. EFF6: Ease of use within the site. EFF7:Ease of site load EFF8: Site buttons are organized.	5-point Likert scale
System availability	System infrastructure	FUL1: Delivery of orders is guaranteed. FUL2: Time taken to avail items is attained. FUL3: Ease in customer delivery needs. FUL4: All ordered items are sent. FUL5: Stock is available as expected. FUL6: Any offers are truthful. FUL7: Accuracy in delivery of products as expected.	5-point Likert scale
Fulfillment	Order processing The satisfaction of system requirements Predictability	SYS1: Uptime is guaranteed. SYS2: quick in launching of the site.	5-point Likert scale

		SYS3: No crushing of the site. SYS4: No freezing pages even after orders are made.	
Privacy	Information security System security	PR1: Customer protection of information guaranteed. PR2: No personal information shared to other sites. PR3: Credit cards protection.	5-point Likert scale
Responsiveness	Recoverability Task conformance	RES1: Ease of order returns from customers. RES2: Handling of product returns well is easy. RES3: Guaranteed offers given. RES4: Tell the customers what needs to be done in case the transaction failed. RES5: Proper problem handling.	5-point Likert scale
Compensation	Indemnification	COM1: Incase of problems from the site,compensation is taken into consideration. COM2: Compensation in case of delay of orders. COM3: Picking of items that needs to be returned.	5-point Likert scale
Contact	Customer support System updates	CON1: Customer support is top notch. CON2: Availability of support is guaranteed. CON3: Live chats are available to handle all the needs a customer has.	5-point Likert scale

3.6   The Pilot Study

The Pilot testing objective was to classify and eliminate potential problems of the questionnaire e.g. grammatical and phrasing issues. During this phase, any part of the tool which was found to be causing misunderstanding, or was otherwise unclear or irrelevant was re-written or eliminated. The final tool was thus updated and finalized accordingly based on the response established, as well as the consequences of the different tests done in the pilot study. The specific tests done in the pilot are discussed below.

(i) Time needed to fully understand the questionnaire and draw conclusions: This involved nearly classifying and removing potential mistakes in the questionnaire e.g. due any grammatical or phrasing issues. The respondents noted the time they took to finish the survey and this was used to ensure the survey instrument was pure and brief.

(ii) Content Validity Testing: This was used as an initial screening process and it simply meant that the degree to which survey respondents believe the questions are relevant to the study investigation being conducted.

(iii)Reliability of Construct Measurement: This was to assess what was intended to be measured was consistently measured by the data collection instrument. Instrument reliability was assessed on the pilot data using measures for composite reliability as well as Cronbach's alpha whereby high measures of reliability coefficient (alpha) are indicative of a highly reliable instrument.

Results of the pilot phase of the study enabled to clarify any misconceptions and/or unclear wording in the final tool. Some of the questionnaire items were re-formulated and re-arranged for the easier flow of ideas, as well as to ensure they fully captured the essence of the constructs being investigated. The measurement items were also tested for validity and reliability, whilst convergent and discriminant validity were used to test the structural model. Feasibility of the study was determined by all these tests..

3.7   Assessing the Measurement Model

3.7.1 Reliability analysis by Cronbach's alpha

Reliability is referred to as the instrument's ability to measure a phenomenon consistently. It can also be tested through a) data collector b) origin of data (C) accuracy of data collection method (d) time of collection (e) accuracy level desired and achieved? (Kothari, 2004).

Validity infers the applicability and helpfulness of the data gotten over such robust design in so far as definitive results are concerned (Kothari, 2004). To ensure data reliability and validity, reliability has been addressed through the development of a case protocol and a summary of definitions on service quality of e-procurement system.

The alpha of Cronbach is a common measure of reliability. Internal consistency defines the degree to which all items in a test measure the same concept or construction linked to inner connection of the items in the test (Choudhury, 2012).

The alpha (α) value may range from negative infinity to 1. Only positive alpha values, however, are meaningful. In overall, the alpha coefficient varies in value from 0 to 1, and this value increases the comparisons between the objects (Mohsen & Reg, 2011). A scale that has the alpha coefficient of Cronbach greater than or equal to 0.7 is acknowledged in this analysis.

Cronbach's alpha analysis also helps to check whether any item is incompatible with the rest of the scale by item-total comparisons, in addition to determining the accuracy of scales. Variables with more than 0.3 item-total correlations will be accepted; other variables with less than 0.3 item-total correlations will be omitted from the data for the study.

3.7.2 Exploratory factor analysis

Scrutiny of exploratory variables is a powerful statistical technique used to reduce and summarize data. The adequacy of sampling for factor analysis is grounded on the scale of Kaiser-Meyer-Olkin (KMO). If the KMO has a value ranging from 0.5 to 1.0 and the factor analysis is acknowledged to be less than 0.5 at being significant. If the value of the KMO is less than 0.5, or the factor analysis may not be approved if significance is more than 0.5.

An investigator can determine the figure of factors to be extracted from the model by conducting an exploratory factor analysis. The creation of the Kaiser states that investigator should use

several factors equal to the number of the eigenvalues the correlation matrix's values greater than one (DeCoster, 2012).

Interpreting factor matrixes is a significant part of exploratory factor analysis. To produce multiple group factors, this investigation will use the Varimax rotation procedure. Loads of factors that point to correlations amongst variables and factors need have values > 0.5. In this case, the variables that have a great load on it can be interpreted as a factor.

3.7.3 Measurement of E-S-QUAL and E-RecS-QUAL

The recovery of e-service quality and e-service quality is now measured with the performance scores multiplying the weights as follows:

$$ESQUAL_j = \sum_{i=1}^{n} WS_{ij} \bullet PS_{ij}$$

$$ERecSQUAL_j = \sum_{i=1}^{n} WR_{ij} \bullet PR_{ij}$$

Where

$ESQUAL_j$: the e-service quality score of item statement j; WS_{ij}: the weighting factor of e-service quality of item statement j to an individual i; PS_{ij}: the score obtained from individual i with respect to the performance of e-service quality on item statement j; $ERecSQUAL_j$: the e-service quality's recovery score of item statement j; WR_{ij}: the weighting factor of e-service quality's recovery of item statement j to an individual i; and PR_{ij}: the score obtained from individual i with respect to the performance of e-service quality's recovery on item statement j.

The scores from the above calculations ($ESQUAL_j$ and $ERecSQUAL_j$) are the performance scores of the e-service to be evaluated.

The weighting variables are the score of normalized significance and can be determined as follows:

$$WS_{ij} = \frac{IS_{ij} - (IS_j)}{(IS_j) - (IS_j)}$$

$$WR_{ij} = \frac{IR_{ij} - (IR_j)}{(IR_j) - (IR_j)}$$

Where

IS_{ij}: the score of the importance of service quality of item statement j to individual i; and IR_{ij}: the score of the importance of service quality's recovery of item statement j to an individual i.

3.7.4 Regression analysis

Regression analysis is a modeling method for examining the relationship amongst customer satisfaction as dependent variables and dimensions as independent variables. Assessment of each variable on the dependent variable impact in that, identifying any change in independent variable can be predicted upon by variation in independent variables through regression function.

At first, assumptions for regression analysis need to be tested. The key premise is on relationship amongst independent and dependent variables are linear. This research examines the model with multiple independent variables, and a VIF would be utilized to form correlation amid independent variables (multi-collinearity). The regression model admits variables that require a VIF < 10. Therefore, the error terms are presumed to be fixed, random variables are normally distributed with a mean value of 0, and there are constant variances. So long as these expectations are not really sullied, a regression model is recognized. R-square will offer a goodness-of-fit measure. By a higher R-square value, the model is a higher fit for inquiry.

3.8 Ethical considerations

Before the survey was initiated, the authority to research Murang'a county government was sought and received from the Muranga' county government.

Ethical clearance was also obtained from the University of Nairobi (UoN). Additionally, approval to research the E-procurement offices was obtained from the Director of Procurement Services (Murang'a county government).

CHAPTER FOUR

RESULTS & DISCUSSION

The chapter discusses the results & findings in line with research objectives, which were: to determine user observation based on its quality services offered in IFMIS system. This primarily covers the background information concerning the respondent as well as the company background. A total of 104 users of the IFMIS system responded.

4.1   Reliability analysis

A main component reliability study was done to authenticate internal consistency in connection to the overall quality of e-service perception of an E-procurement system. The reliability test of likert scale having multiple questions is done throught the Cronbach's alpha. The reported reliability was 0.745, Efficiency, 0.755 for Fulfillment, 0.811 for System readiness, 0.761 Privacy, 0.718 Openness, 0.901 Compensation, 0.783 Contact, also 0.87 for general e-service quality insights. The study is clear that there are seven important dimensions, all of which rate their values above 1 (Kaizer 1960, Kaizer, 1974).

The variables depict some acceptable level of reliability. As a thumb rule, if it is above 0.7, the value of the reliability test is adequate. In this case of the research, the values are above 0.7.

Table 4.1 Reliability analysis

| Scale | Dimension | No. of Items | Cronbach alpha for dimensions | Items | **Reliability Coefficient (Cronbach's alphas)** | | | |
					Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
E-S-QUAL	System Efficiency	4	0.745	Q1eff	11.9615	5.707	.483	.716
				Q2eff	10.6827	4.918	.609	.646
				Q3eff	11.1731	5.310	.451	.735
				Q4eff	10.8654	4.448	.625	.633
	Fulfillment	4	0.755	Q5ful	11.4135	2.827	.713	.596
				Q6ful	11.3365	3.352	.541	.707
				Q7ful	11.5385	3.746	.557	.697
				Q8ful	11.6635	4.264	.426	.759
	System availability	4	0.811	Q9ava	10.1635	4.177	.660	.749
				Q10ava	9.8942	4.736	.506	.817
				Q11ava	9.6058	3.717	.667	.747
				Q12ava	9.6827	4.102	.699	.731
	Privacy	3	0.761	Q13pri	6.6250	1.479	.672	.584
				Q14pri	6.8077	1.788	.556	.720
				Q15pri	6.6827	1.597	.556	.723
E-RecS-QUAL	Responsiveness	2	0.718	Q16res	3.3558	.464	.573	.
				Q17res	3.6827	.704	.573	.
	Compensation	2	0.901	Q18com	3.5577	.521	.820	.
				Q19com	3.5481	.503	.820	.
	Contact	3	0.783	Q20con	5.8558	1.445	.674	.657
				Q21con	5.7404	1.417	.511	.840
				Q22con	5.7308	1.344	.702	.620

Source: SPSS Output

4.2   Sample Size Testing

According to Kaiser – Meyer – Olkin (KMO), the Bartlett sphericity is done through the sample of all scales that are suitable and verified by the correlated variables and its sample in all its scales (Norusis, 1990). Determination of KMO metric was deployed in order to determine adequacy of the size sample. The minimum acceptable value is 0.5 and for all scales with true N=104, the sphericity test by Bartlett is important at p<0.001. Bartlett's Test of Sphericity as depicted in the following table showed it was significant with resulting intercorrelations that were sufficient.

Table 4.2 KMO and Bartlett's Test

KMO and Bartlett's Test

Variable	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	Bartlett's Test of Sphericity		
		Approx. Chi-Square	Df	Sig.
System Efficiency	.751	91.742	6	.0002
Fulfillment	.672	112.847	6	.0001
System Availability	.788	137.803	6	.0001
Privacy	.666	80.026	3	.0000
Responsiveness	.500	40.364	1	.0002
Compensation	.500	113.260	1	.0001
Contact	.655	106.282	3	.0001

Source: SPSS Output

4.3   Correlation analysis

To measure the degree to which the dimensions "go together," a correlation matrix to the dimensions was performed. There is a positive correlation that results due linked great values of one dimension with those of a different dimension. In the same way, there is negative correlation

that result due to high values on one dimension and correlated to lower ones on another dimension.

System quality and system performance have (r=0.515, n=104, p0.01) showing highest correlation coefficient whilst privacy and Reward (r=0.252, n=104, p≤0.01) depicts weakest correlations.

Table 4.3 Correlation analysis

Variables	Eff	Ava	Ful	Pri	Res	Comp	Cont
Fulfillment			1	.35203(**)	.31200(**)	.39701(**)	.30901(**)
Privacy				1	.401(**)	.252(**)	.376(**)
System Efficiency	1	.35401(**)	.51502(**)	.47800(**)	.45701(**)	.28302(**)	.36203(**)
System availability		1	.43701(**)	.49802(**)	.40102(**)	.26700(**)	.41301(**)
Responsiveness					1	.39702(**)	.47101(**)
Compensation						1	.50102(**)
Contact							1

Source: SPSS Output

4.4   Multiple regression analysis

So as to elaborate the meaning of variables that are independent and dependent, multiple regression was performed so that an analysis was used to predict the values of other dimensions. Similar to p-value is the alpha rate, which is usually 0.05, this determines whether independent variable predicts the dependent variable accurately if its value is lower. Incase p-value>0.05, dimensions in the independent category would not predict those on dependent side accurately or even shown positive relationship statistically.

The seven perceived general electronic service quality dimensions of the IFMIS platform were analyzed in this study. To test this relationship, multiple regression analysis is performed. The table below shows the Significant level and intercept in addition to the multiple estimated linear regression.

Table 4.4 Multiple regression analysis summaries (N = 104)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std error	B			Tolerance	VIF
(Constant)	0.91542	0.13423		5.55831	0.00000		
Efficiency	0.12521	0.04612	0.09712	2.64233	0.00820	0.77330	1.25808
System availability	0.16912	0.05133	0.17122	3.73231	0.00104	0.76203	1.26422
Fulfillment	0.17541	0.03922	0.17342	3.75221	0.00703	0.78500	1.29143
Privacy	0.10209	0.04101	0.18543	3.87502	0.00010	0.76902	1.25123
Responsiveness	0.19813	0.04044	0.27833	4.12541	0.00001	0.79700	1.26203
Compensation	0.14844	0.04732	0.12642	2.24115	0.00713	0.85412	1.16702
Contact	0.20103	0.03713	0.31214	6.29719	0.00002	0.75701	1.23514

Notes: R^2 0.34300; Adj R^2 = 0.33701; Sig. F = 0.00000; F-value = 39.57101; dependent variable, p, 0.01

The dimensions are forced unto a multiple linear regression in an attempt get the collinearity and Beta weights. An independent variable is expressed in its relative importance by a standardized term through the Beta. (F = 39.571) is significant on the variance given by electronic service quality dimension 34.5% for dependent variable. Beta represents relative significance of respective independent variable under standardized terms. A variance described in the dependent variable of the dimensions of the e-service is 34.301% that is important. This shows there is positive relationship on all predictors of the dimensions as shown by electronic service quality of the IFMIS system. Responsiveness follows contact having (β=0.278) and (β= 0.312) has higher impact respectively. The table helps to check against our multicollinearity model. This is phenomenon that checks with some degree of accuracy how predictor variable can be linearly

predicted from others in a multiple regression. Tolerance is equated as being greater than 0.1/ VIF is less than 10 for all variables. In our case it has met the threshold.

4.5 Measurement of E-S-QUAL and E-RecS-QUAL

Table 4.5 E-S-QUAL Results

Dimensions		IS_j	WS_j	PS_j	$E\text{–}S\text{–}QUAL_j$	$E\text{–}S\text{–}QUAL_j$
System Efficiency	Q1eff	4.030	0.757	3.997	3.027	3.13125
	Q2eff	4.149	0.787	4.033	3.175	
	Q3eff	*4.020*	*0.785*	*4.001*	*3.140*	
	Q4eff	4.036	0.759	4.194	3.183	
Fulfillment	Q5ful	4.030	0.757	3.732	2.827	2.9815
	Q6ful	4.109	0.711	3.861	3.001	
	Q7ful	3.844	0.812	3.977	2.828	
	Q8ful	4.248	0.805	4.026	3.270	
System availability	Q9ava	4.189	0.797	3.977	3.170	2.81025
	Q10ava	3.940	0.735	3.801	2.794	
	Q11ava	3.666	0.666	3.632	2.421	
	Q12ava	3.887	0.722	3.957	2.856	
Privacy	Q13pri	4.149	0.787	3.967	3.123	3.095
	Q14pri	4.182	0.796	4.007	3.187	
	Q15pri	4.000	0.750	3.967	2.975	
Average		4.015	0.7535	3.982	3.0121	

Source: SPSS Output

An average score of 3.131 is established for System efficiency having the highest performance rating on the E-S-QUAL scale dimension. Among other dimensions, it is evident that the system efficiency is so important as compared to other dimensions. The least average rating score of 2.810 is computed for the system availability.

Table 4.6 E-RecS-QUAL Results

Dimensions		IR_j	WR_j	PR_j	$E\text{–}RecS\text{–}QUAL_j$	$E\text{–}RecS\text{–}QUAL_j$
Responsiveness	Q16res	3.964	0.741	3.762	2.788	2.8015
	Q17res	4.012	0.753	3.738	2.815	
Compensation	Q18com	3.798	0.699	3.440	2.409	2.3175
	Q19com	3.643	0.661	3.369	2.226	
Contact	Q20con	3.610	0.827	3.685	3.047	3.0355
	Q21con	3.469	0.842	3.589	3.022	
	Q22con	3.843	0.786	3.864	3.037	
Average		3.762	0.7635	3.635	2.764	

Source: SPSS Output

The highest rated average rating importance score of 3.0355 is computed for contact on the dimension part of E-RecS-QUAL. It is evident that the end users perceive availability of services online is highly regarded as the most important feature compared to all other dimensions. On the other hand, the average rating on compensation is computed on 2.3175. This shows that

compensation is the least rated; in addition, it is surprising to note that this dimension has been poorly rated by the end users and a clear indication that the system has not performed at par with other dimensions.

4.6   Structural Model Evaluation

As detailed in the previous section, measurement model was examined and confirmed to exhibit good individual item reliability, Relationship tests, the extent to which the dimensions "go together" and appropriateness of the sample, with all related measurement values falling within acceptable standard limits. This was achieved after some of the initial manifest variables.

Hence, the endogenous and exogenous variables have been robustly tested by this model in an attempt to test their relationship.

A summary of proposed hypotheses which are all based on the 7 causal paths of the study's conceptual model.

H1: Efficiency influences positively on users' overall perception of an E-procurement system

H2: System availability influences positively on users' overall perception of e-service quality

H3: Fulfillment influences positively on users' overall perception of e-service quality

H4: Privacy influences positively on users' overall perception of e-service quality

H5: Responsiveness influences positively on users' overall perception of e-service quality

H6: Compensation influences positively on a user's overall perception of e-service quality

H7: Contact influences positively on users' overall perception of e-service quality

4.7   Hypothesis Testing and Validation

To test the hypothesis, a One Sample t Test was used to analyze the desirability level of dimensions. p values will help in determining the significance of the results from this test.

Table 4.7 Hypothesis Testing and Validation

Hypothesis	Acceptable P -value	Computed P –value	Model results
Efficiency influences positively on users' overall perception of E-procurement system	> 0.05	0.628	Accepted
System availability influences positively on users' overall perception of e-service quality	> 0.05	0.603	Accepted
Fulfillment influences positively on users' overall perception of e-service quality	> 0.05	0.390	Accepted
Privacy has a positive influence on users' overall perception of e-service quality	> 0.05	0.306	Accepted
Responsiveness influences positively on users' overall perception of e-service quality	> 0.05	0.530	Accepted
Compensation influences positively on a user's overall perception of e-service quality	> 0.05	0.060	Accepted
Contact has a influences positively on users' overall perception of e-service quality	> 0.05	0.301	Accepted

From the above test, it has been verified that the above constructs affect the overall quality of the e-procurement system.

4.8   Qualitative Analysis

The other section of the questionnaire was based on opinions of individuals based on how they perceived the e-procurement system.

The opinions were later grouped into themes and described in the table below.

Table 4.8 Qualitative Analysis

Main theme	Sub-theme	Description
System legislation	- Non-compliance - Political influence -System design	- Suppliers do everything offline only the payment is done in the system - System not complying fully with the acts - No end to end procurement process through the system - Tender documents too huge to fit in the system - Lack of political support makes the system to fail
Training	-System operation - Stewardship - Price	- No training done about the system - System does not allow edits once you submit - Market survey not properly done - Roles not fully separated
Ethics	Code of conduct	- Super users can manipulate the system from anywhere anytime
Payments	- Invoicing - Auditing - Price	- The whole process of invoicing is not done on the system - Budgeting and planning sometimes do not tally - Market survey not properly done

4.9   Linking qualitative and quantitative data

The qualitative data was further linked with the quantitative constructs and the results were as in the table below.

Table 4.9 Linking qualitative and quantitative data

Main theme	Qualitative Description	Quantitative constructs
Training	Lack of training on system use	System efficiency
Responsiveness	Roles not fully separated through users tasks designation	Fulfillment
Payments	The whole process of invoicing is not done on the system	Compensation
Customer support	Customer support not readily available	Contact
Ethics	Super user can view and change details of other system users	Privacy
Infrastructure	Inadequate investment in system infrastructure	System availability
Task conformance	Sometimes the system is not able to respond to request immediately	Responsiveness

From the above, it is clear that some of the users of the system are not satisfied especially with issues relating to system availability, privacy, and compensation. This connotes dissatisfaction on the usage of the system from end user's perspective. Therefore, Government should formulate and adopt electronic strategies to mitigate the aforementioned issues especially the ones to do with e-service quality constructs.

Additionally, all characteristics of electronic service quality require constant monitoring, evaluation and improvements. Moreover, both technical and non-technical aspects of the electronic service should by enhance in so that user gratification can be realized (Loiacono et al. (2002).

CHAPTER FIVE

RECOMMENDATIONS & CONCLUSION

This part gives an instantaneous of the key findings from and their inferences to the different stakeholders concerned with E-procurement system use.

5.1 Linking the Findings of the study with the Original Objectives

This section summarizes how the specific objectives were achieved and corresponding research questions responded to by the time the study was concluded.

Objective 1: To determine the quality of the procurement system service

The research started by developing a study contextual model informed by the knowledge learned over relevant literature analysis and an appreciative of the context through which theft of public resources is done through the system.

The pilot phase enabled to test the research model's measurement items for validity & reliability. Besides, also test a structural model for convergent as well as discriminate validity. Consequently, the proposed study model including new constructs and measures was confirmed to be a valid and viable conceptualization of the relationships influencing the overall system satisfaction.

Thus the first research objective was achieved and the corresponding two questions answered based on theoretical investigation and qualitative research involving key stakeholders and subject experts:

1. How do we determine the service quality of the electronic procurement system?
2. What is the level of quality of the electronic procurement system

It was found that the respondents were at an average level of (3 out of 5) in terms of satisfaction of the services offered by the electronic procurement system. This implies the organization isn't offering an IS that is completely fulfilling to its clients.

Objective 2: To determine the issues that affects the system to manipulation.

The issues leading to system manipulation were studied in the literature review. Besides, qualitative data was corrected and the users of the system were able to state the main issues

leading to the system being manipulated and consequently public money getting lost. The issues had been initially been grouped into themes and later linked with the model constructs. The issues identified include:

1. Roles of the system users not fully separated eg the super users can make changes from anywhere any time.
2. The whole invoicing process is not done on the system, this creates a loophole for manipulating the invoicing process.
3. Lack of proper training about system usage has made it easy for users to expose themselves to hacking.

Objective 3: To propose guidelines that will help to enhance system quality.

Based on the research done on both literature review and data collection, it was clear that there is a huge problem with the e-procurement system. If actions are not being taken, more and more funds will get lost. For this reason, the management has to keep an eye on the various issues raised especially on the qualitative data gathered and work to improve them.

Issues	Solution
Lack of training	-Regular training on the system used must be done. Regular seminars and workshops Performance review to be done often
Roles not being separated	Users to be given a specific task they should be answerable to
Infrastructural issues	The government should ensure the machines being operated on the facility are upgraded to the latest technological standards
Customer support not readily available	Provide many channels to cater to the customer such

	as 24hr support team, social media support, telephone, and emails.

The other areas that didn't require special attention should not be neglected either. More resources ought to be committed for the system to fully meet the standards to deliver quality services.

5.2   Research Contributions and Implications

A detailed contribution was classified into two categories namely: Theoretical and Practical /Managerial as discussed below.

5.2.1   Theoretical contribution

The contribution under this category gained was the discovery of other factors that contribute to system manipulation which were not mentioned in the literature. The factors were gotten from the findings done from an exploratory qualitative study that garnered informed opinions from key stakeholders.

5.2.2   Policy implementation

The findings from this study are not only relevant to worldwide but also have practical implications for policymakers in making policy relating to the system. Policymakers may use the information gathered and make policies like:

1. Raise standards for system users especially the employees by ensuring that they have undergone necessary training before being given any task regarding the system.
2. Set laws that will ensure constant funding is made on the system infrastructure.

5.3   Study Limitations

Despite the official roll-out of e-procurement system use, which was completed approximately 3 years before the study started, the intended users who had consistently made use of the program were still very small. This then meant that the target population that could be included in the study was also quite limited. Another potential inadequacy is that fact the study relied on the perception of the study respondents and an assumption of their truthfulness in self-reporting on their e-procurement use behavior.   Though there is no evidence to suggest that they under or exaggerated their system use characteristics, it might have been more authentic if this had been gauged directly from examining the system use logs as was done in original studies including

those of e-RecS-QUAL and E-S-QUAL. This was not feasible under the current setting of e-procurement implementation in Kenya. These limitations notwithstanding, the study provided useful findings that contribute considerably to expanding knowledge and understanding of factors that influence the overall E-procurement services setting of developing countries. This can serve as a guide to further research in this subject area.

5.4   Recommendations of the Future Research

The study has successfully been able to come up with other aspects that affect quality of an electronic procurement system. However, there are still some aspects that would benefit from further exploration in future research.

First, it might be beneficial for future research to apply a longitudinal study approach to test how the predictive effect of different factors varies across time. Also, there could be other factors that are not relating directly to the system quality usage but have significant influence other the ones that affect the overall system quality. This area needs to be explored further.

Though the study was conducted primarily in Kenya's public sector, it is would be important to conduct the study in the private sector where similar systems are used. Further research can be done to ascertain the validity of the study model in such settings.

5.5   Conclusion

The study contributed to measuring E-procurement quality of service literature. This was done by examining the validity of theoretical and the practical appropriateness of both the e-RecS-QUAL and E-S-QUAL scale in a diverse setting.

The increasing effort by many developing countries computerize their e-procurement processes, this study has important efforts for customization & deployment of such systems and other systems as well as in similar setting. Ultimately addressing the issues influence the overall system quality leads to enhanced procurement and proper use of public resources.

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APPENDICES
Appendix 1: Letter of Introduction

UNIVERSITY OF NAIROBI
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Our Ref: UON/CBPS/SCI/ MSC/ITM/2017

17 December 2018

Muranga County Government
Ministry of Health

Dear Sir/Madam

RE: RESEARCH PERMIT – KIARA CHARITY MURINGO REG. NO. P54/6473/2017

The above named is a bona fide student pursuing an MSc course in Information Technology Management at the School of Computing and Informatics, University of Nairobi. She is currently carrying out her research on the project entitled *"Evaluation of E-Procurement System Service in the Ministry of Health: Case of Murang'a County Government Health Ministry"*. She is under supervision of Mr. C. A. Moturi.

The project involves gathering relevant information from various institutions and she has informed the office that she would wish to carry her research in your organization.

We would be grateful if you could assist Ms. Muringo as she gathers data for her research.

If you have any queries about the exercise please do not hesitate to contact us.

Yours sincerely

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DR. AGNES N. WAUSI
DIRECTOR
SCHOOL OF COMPUTING AND INFORMATICS

ANW/jsn

Appendix 2: Questionnaire

<table>
<tr><td colspan="1">Research On The Evaluation Of E-Procurement System Service In Ministry Of Health: A Case Of Murang'a County Government Health Ministry.</td></tr>
<tr><td>In the scope of the elaboration of a thesis of Master Degree in Information Technology Management, the aim is to assess the quality of the services provided by the Ministerial Purchasing Unit of the ministry of health, in relation to electronic public purchases, by means of an opinion questionnaire.

The views are not subject to an individualized analysis and anonymity is respected.

There is no right or wrong answers to any of the items, only your personal and sincere opinion is intended. Tick the 'X' of your choice.

The estimated time for your participation is approximately 3 to 5 minutes. Thank you in advance for your cooperation.</td></tr>
</table>

Respondent Data:

A. Gender	
	Male
	Female

B. Age	
	18 to 29
	30 to 39
	40 to 49
	50 to 59
	60 or more

C. Literacy Qualifications	
	Primary Education Certificate
	High School Certificate
	Diploma
	Bachelor's Degree
	Master
	PhD

E. Company the providing service

F. Position in the Organization

	Suppliers
`	Auditors
	Finance
	Regulators
	ICT department
	National treasury
	Employee
	Other

Please give your opinion on the characteristics and mode of operation that IFMIS should possess in the context of electronic public procurement.

For each statement, select on a scale of 1 to 5 the option chosen, in accordance with the degree of agreement with the exposure, Assign it with an **X** to your choice. The greater the match, the greater the number; the smaller the match, the smaller the number.

Note: There is no right or wrong answers, because the interest of the study is only to identify a number that best translates your **expectations** regarding the IFMIS system.

No.	Service Item	Strongly Disagree -			Strongly Agree +	
		1	**2**	**3**	**4**	**5**
1	It is easy to access what I want in the IFMIS system					
2	It is easy to navigate the IFMIS system					
3	The IFMIS system enables me to complete a transaction very quick					
4	All the information at the IFMIS system is organized well					
5	The IFMIS system enables me to get the specific service I want					
6	The IFMIS system delivers feedback when promised					
7	It provides information that I'd like to receive.					
8	The IFMIS system is truthful about the information it provides					
9	The IFMIS system is always available					
10	The IFMIS system loads and runs in no time					
11	The IFMIS system does not crash					
12	The IFMIS system does not freeze after I enter information about my services.					
13	The IFMIS system protects my information from being modified by others					
14	This system does not share my personal information with others					
15	The system protects information about my personal data.					

16	The IFMIS system allows me to make corrections when I feed in information wrongly.					
17	The IFMIS system responds to requests					
18	The IFMIS system compensates the users in case of changes resulting from system usage policy.					
19	The IFMIS system compensates problems relating to the system					
20	The IFMIS system support team is available					
21	It has information about what is going on in the county					
22	The IFMIS system provides customer service in case of a need to be helped					

Please indicate, according to your opinion, the general level of satisfaction with the service provided by Ministerial Purchasing Unit of the in Ministry Of Health: A Case of Murang'a County government Health Ministry.

Please rate 1 to 5, and the higher the satisfaction, the higher the number; how much the lower the satisfaction, the lower the number. Tick the ' **X** ' of your choice.

Concerning	Poor				Great
	—			+	
General Quality	1	2	3	4	5
How do you rate the overall quality of service by the Ministerial Procurement Unit of the Ministry of Health?					

Thank you for your collaboration.