



# **INFLUENCE OF ORGANIZATIONAL TECHNICAL CAPACITY ON DELIVERY OF E-GOVERNMENT SERVICES IN SELECTED GOVERNMENT MINISTRIES IN KENYA**

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## **Abstract**

*The e-government concept promises to increase citizen participation in governance, make the service delivery process more efficient and effective, reduce costs, and minimize bureaucracy. However, the high rates of failure in the enactment of electronic government in developing economies is alarming and of primary concern to achieving the desired growth and development. The purpose of this study was to evaluate the elements that influence the delivery of technologically-based services in selected ministries in the republic of Kenya. Specifically, the study sought to explore the influences arising from organizational technical capacity. The study was guided by the Technology Acceptance Model. It utilized the descriptive survey design where data was collected from ten selected ministries within the Government of Kenya. The study targeted 235 ICT staffs within the ten ministries from which a sample of 144 staffs was recruited into the study using the proportionate stratified random sampling method. The data*

*collection procedures entailed the use of structured questionnaires and findings analysed using both the multiple linear regression technique and descriptive statistics. Results revealed that technical capacity ( $\beta= 0.380$ ,  $p= .005$ ) has a positive and statistically significant influence on e-service delivery by the selected government ministries. The study recommends that to have a major improvement in e-service delivery, the ministries should allow staff to share their concerns, contribute ideas, and participate in implementation of e-government programs so as to create a sense of ownership in the platforms. The ministry should also train their staff on ICT use.*

*Keywords: Technical capacity, electronic government, e-government, government ministries, Kenya*

## **INTRODUCTION**

The concept of electronic government has gained impetus in many parts of the world including Kenya. It entails the use of information communication technologies (ICTs) in the delivery of government amenities and services (Mungai, 2012). It is a critical component towards the transformation of government and promotion of optimal service delivery to the public. Although e-government is widely related with online government services, it also incorporates a wide range of other non-internet technologies such as SMS text messaging, tracking systems, biometric identification, smart cards, and RFID. The implementation and use of e-services have significant benefits that entail the simplification of the service delivery process, minimizing bureaucracy, improving interaction between government and its customers, and reducing costs (Alshorani, 2012). The electronic government concept exploits the interactive features offered by ICT technologies to improve public outreach and service delivery.

The concept of e-government is highly advanced in the developed nations. In the United States, 89% of government ministry had services that were fully executable online in the year 2008 (West, 2008). E-services have also become a norm rather than an exception in the European Union (Nixon, Koutrakou, & Rawal, 2010). Many European countries view electronic government as an integral element within the public sector reform directed towards the enhancement of citizen engagement and trust (Agbabiaka, 2018). Through the *e-Europe 2005 Action Plan*, EU has managed to modernize public service and create a knowledge-based economy across the region. Using this blueprint, most European countries managed to make 94% of public services available online, in 2010.

In Africa, the e-government concept was conceived in 1996 when the African Information Society Initiative (AISA) provided guidelines recommending the need for developing and implementing national plans and policies that promote and encourage the adoption of ICT in key national administrative settings and economic sectors (Hafkin, 2009). In the intervening period, Africa has witnessed the adoption of electronic government programs. According to Omwoyo (2010) there are three models of e-governance evident in Africa that involve intergovernmental interactions (G2G), those conducted with businesses (G2B), and those services delivered to citizens (G2C). Although the African continent has achieved tremendous growth in the adoption of e-governance, the continent still experiences formidable challenges in the form of limited technological infrastructure, limited internet access, technophobia, public service culture, and limited political will.

The electronic oriented programs were launched in Kenya, in 2004, as priority projects to achieve the goals and objectives of national development to creating wealth and employment, facilitating better and efficient service delivery, promoting public service productivity and encourage citizen participation in governance while empowering all Kenyans (Mungai, 2012). A survey by the UN Department of Economic Affairs (2014) showed that Kenya and Morocco are the frontrunners when it comes e-participation ranking. A significant factor that has steered the issue of e-governance in Kenya is the proliferation of mobile phones. Reports show that 99% of internet users in Kenya access the internet through mobile devices (Kariuki, 2015). This trend has had momentous implications regarding the design of such services. Many Government ministries have been compelled to deploy SMS services and develop mobile application to facilitate electronic government uptake. The rise in use of mobile payment services such as Mpesa has also fuelled the growth of electronic government services. Political goodwill has also played part in the progress of e-government in Kenya with recent regime showing support toward promoting ICT use in governance.

Some government ministries have been more successful in developing and implementing e-government services than others. Studies show that the delivery of government online services is dependent on a variety of factors. One of these factors is technical knowledge and skills. The availability of appropriate ICT skills and competencies among government staff is essential for successful execution of e-services (Nkohkwo & Islam, 2013). Employees require technical skills in order to design, implement, maintain, and use ICT infrastructure to support delivery of services. In their systematic literature review, Nkohkwo and Islam (2013) found that human resource challenges were among the factors hampering the optimal and adequate adoption and integration of information communication technology resources in the delivery of government services in many African countries.

## Statement of the Problem

The electronic government concept presents an opportunity for governments to enhance the competence and efficacy of services provision, increase citizen participation, and enhance accountability. However, project failures in implementation particularly in the developing world have been alarming. A World Bank Report showed that only 15 of electronic service programs executed in developing countries were considered successful out of the 100 initiatives analysed with 50 such projects reporting partial success while 35 failed entirely (Khanh, 2015). In Kenya, different government ministries have developed ICT platforms with the view of implementing the government vision of promoting e-governance. With the influx of mobile telephony and an internet penetration rate of 89.4%, most of the Kenyan citizenry has been demanding to access government services online (Kariuki, 2015). However, some ministries have been more effective than others have in terms of formulating and effecting these services. The Ministry of Education and the National Treasury are among the ministries that have achieved relative success in the implementation of e-government services. A major case of success is the e-Citizen online platform under the Treasury Department. The platform integrates payment for over 100 government services including driver's license renewal, company and business registration, passport and visa applications, and civil registration. As at January 2017, the platform had 4 million registered users with more than 300,000 transactions worth more than Kshs. 400 million recorded every month (Wille & Masinde, 2017). I-Tax and Simba Systems are other examples of successful e-government services under the Finance and National Treasury Ministry. On the other hand, the Ministry of Land has lagged in terms of digitizing its services. Most of its services such as registration of land and conducting land searches are largely manual despite the fact that these services can easily be digitized (Mburu, Ntonjira, & Njeri, 2017). The differences in the implementation of e-government services by various ministries suggest the existence of institutional factors that determine the success of a given ministry in delivering e-government services. Unfortunately, no study has been conducted to identify these factors. The current study sought to address this knowledge gap by examining the influence organizational technical capacity on delivery of e-government services in selected ministries in Kenya.

## LITERATURE REVIEW

The concept of automating and using information systems to advance service delivery in public facilities is being increasingly adopted in various parts of the world as strategy for improving productivity and promoting efficiency. In Malaysia, Siddiquee and Mohamed (2015) observed that the government had implemented a variety of e-government programs, which have transformed the mode of service delivery as well as interaction between the people and their

government. The electronic government programs have generated numerous benefits including improved access to services, greater efficiency in service delivery, improved transparency, and convenience among others.

Kenenissa and Cho (2017) studied the implementation of electronic government agendas in South Korea and noted that ICT infrastructure and human capital are among the issues that should be given special attention to enhance services. In the study examining delivery of e-government services in Uganda, Kituyi and Anjoga (2013) found that the usability of electronic government services can be augmented by enhancing the functionality, accessibility, cost efficiency, and flexibility of such platforms. The study also revealed the need to improve content usefulness, interactivity, and screen design of the platforms.

In Kenya, Asiligwa (2014) used the UTAUT model to examine the degree of e-governance services application at the county government of Nairobi. Findings showed that the adoption of the e-governance concept was influenced by performance expectation, social determinants, effort prospect, and other enabling conditions such as organizational cultures and perspectives. Asiligwa (2014) also found that the relationship between the UTAUT variables and e-governance adoption was influenced and heavily impacted by gender and job familiarity of staff. The study however noted that the UTAUT variables covered were not exhaustive in explaining the adoption of e-governance services by the county government and recommended that future studies should consider other variables. The current study sought to examine the influence of organizational technical capacity on delivery of e-government services in selected ministries.

### **Organizational Technical Capacity and Delivery of E-Government Services**

Technical Capacity is cited as an important determinant of delivery of e-government services by public institutions. Technical capacity refers to employees' ability to shift to e-government approaches to delivering services (Mungai, 2012). Employees have a higher likelihood of supporting electronic government programs when they are well trained on the technology and hence they are ready to change. Technical capacity to adopt e-government practices has a significant effect on the application of the concept. This claim is supported in a number of empirical studies.

In their study, Al-Shboul *et al.* (2014) found that lack of competent workforce and inadequate human resource training barred and served as a significant hindrance to Jordan's hope of reaping the benefits of e-Government. Sefeena and Kammani (2013) also found that technical staff capacity was significantly associated with successful operation of electronic services within government establishments in South Africa. The study also revealed that the

level of staff technical capacity to adopt the e-government concept was influenced by their ICT skills, age, technological expertise, perceived risk and behavioural control, past experiences, and communication skills. Alshehri and Drew (2010) argued the most significant determinant of staff technical capacity for e-government is not their technical skills but their culture. Organizations that have flexible and open cultures find it easier to implement e-government services than organizations with rigid culture.

In another study, Alshehri *et al.* (2012) found that government workers' opposition to change to e-ways hampered the integration process for the services in Saudi Arabia. This resistance was attributed to various factors including limited awareness and computer illiteracy, little workers goodwill for concerns that the system would make them redundant, and negative perception regarding the value of such services. Nurdin *et al.* (2011) found that for e-government to be successfully implemented, government organizations need to realize internal integration, which is identification by the organization's people. These authors argued that internal integration could also be realized when employees are actively involved in the advancement and execution of e-government projects.

Hallgrímsson's (2008) research established that technical capacity for change was influenced by the nature of the change. Results revealed that employees were more likely to exhibit a low level of technical capacity when the initiatives involved are so radical and discontinuous. The study recommended that organizational changes such as the introduction of e-government concept be implemented in small, gradual, and incremental steps. Nkohkwo and Islam (2013) argued that existing human resource management processes and systems also need to be re-engineered to support the e-government strategy. He pointed out the need to create recruitment and selection strategies, reward systems, and performance management systems that aligned with e-government goals.

### **Critique of Existing Literature**

Although there are quite a number of studies that have examined the implementation of e-government services, many of these studies have been conducted in Western and Asian countries. For instance, Al-Shboul *et al.* (2014) examined e-government implementation in Jordan while the study Alshehri and Drew (2010) was conducted in Saudi Arabia. On the other hand, Siddiquee and Mohamed (2015) examined the issue from the Malaysian context. The public service context in Africa differs from that of Asian and Western countries in terms of capacity, efficiency, human capital, and infrastructure (Fourie & Poggenpoel, 2016). Therefore, studies on e-government service implementation conducted in Western and Asian countries may not accurately reflect the realities of the public service context in Africa.

A few studies have been conducted to examine the application of the concept of e-government in the African setup. However, the factors covered in these studies are not exhaustive. Gathungu and Mungai (2012) examined how strategy, technological factor, and organizational factors influence the implementation of e-governance services. On the other hand, Asiligwa (2014) focused on the influence performance expectancy, social influence, effort expectancy, and other work-related and organizational factors. The study by Tarus *et al.* (2015) did particularly examined electronic government services but rather the delivery of e-learning services by Kenyan public universities. From these studies, it is evident that a lot still need to be explored with regard to factors that influence the delivery of electronic government services in Kenya. The current study sought to add to this body of knowledge.

### **Theoretical Framework**

The study was guided by the Technology Acceptance Model (TAM). TAM was developed by Davis in 1989 to predict how individuals accept and use information technology (Surendran, 2012). TAM posits that the acceptance and use of technology is dependent on two factors: (1) perceived usefulness of the technology by the targeted users, and (2) perceived ease of use by the targeted users. Perceived usefulness refers to the prospective users' subjective assessment of the extent to which the new technology will be of value to his or her life or work performance. Perceived ease of use is the prospective users' subjective assessment of the extent to which the new technology is free of effort.

TAM further contends that the two factors that influence acceptance and use of technology are influenced by external variables such as attitude, skills, level of awareness and support, and personality (Surendran, 2012). According to Parvari, Anvari, Mansor, and Jafarpoor (2015), support is one of the external variables that have a major impact on individuals' perception of usefulness and perceived ease of use of technology. They defined support as the level of an individual positive emotional attachment, enthusiasm, involvement, motivation, and encouragement towards the possibilities that technology can provide. In their study involving 148 employees, Hwang, Chung, and Lee (2017) also found that the implementation climate and level of support to technology influences perceived ease of use and consequently technology acceptance.

TAM was relevant to the current study as it provided a framework for understanding how managerial support can influence e-government service delivery. A high level of management positively influences acceptance and use of technology by influencing the perceptions of subordinate staff regarding the ease of use and usefulness of the technology. High managerial support also creates a positive implementation climate that is bound to have a positive impact of

staff perceptions regarding the use of technology. Highly supportive managers are also likely to create awareness and provide the assurance needed for the staff to implement e-government services.

## RESEARCH METHODOLOGY

The study made use of the descriptive survey design. The target population for this study was the 235 ICT staff in ten selected government ministries. The sample size for this study was determined using the Krejcie and Morgan table. The Table indicated that assuming a population proportion of 0.5 and a confidence level of 95%, the appropriate sample size for a population of 235 individuals is 144 individuals. The 144 participants were selected using proportionate stratified sampling where the 10 government ministries were treated as strata. The number of participants selected from each stratum was determined total number of ICT staff in the strata. The sampling plan is summarized in Table 1

Table 1: Sampling Plan

Ministries	No. of Departments	ICT Staff	Proportion (%)	Sample Size
Ministry of Treasury and Planning	5	25	10.6	15
Ministry of Interior and Coordination of National Government	5	25	10.6	15
Ministry of Health	3	15	6.4	9
Ministry of Agriculture, Livestock, Fisheries and Irrigation	6	30	12.8	18
Ministry of Transport, Infrastructure, Housing, urban Development and Public Works	7	35	14.9	21
Ministry of Information and Technology (ICT)	2	10	4.3	6
Ministry of Education	8	40	17.0	24
Ministry of Labour and Social Protection	3	15	6.4	9
Ministry of Land and Physical Planning	5	25	10.6	15
Ministry of Public Service, Youth and Gender	3	15	6.4	9
<b>Total</b>	<b>47</b>	<b>235</b>	<b>100</b>	<b>144</b>

Data was gathered through structured questionnaires designed by the researcher. The questionnaire comprised of three sections: A, B, and C. Section A contained multiple-choice questions that elicited information regarding the demographic profile of participants. Section B comprised of a Likert scale containing six items intended to measure the technical capacity of



the ministries. Section C comprised of another Likert scale consisting of seven items aimed at assessing the delivery of e-government services in the ministries.

The validity of the instrument was evaluated by consulting research supervisors at the Department of Pure and Applied Sciences at JKUAT. The researcher sought the supervisors' input concerning the quality, clarity, relevance, and appropriateness of the questions included in the research instruments. The researcher used the supervisors' advice to improve the validity of the instrument. A pilot test was also undertaken to appraise the reliability and validity of study instrument and methods. The pilot test involved 14 ICT staff from three government agencies, which was in line with Morin (2013) recommendation that the size of the pilot sample is at least 10% of the size of the sample for the main study. The 14 ICT staffs that were involved in the pilot study were left out from the main study. The pilot test data also enabled the researcher to evaluate the ability of the instrument to generate data needed to address the research objectives.

The reliability of the questionnaire was tested by examining the pilot test data using the Cronbach alpha test at the 0.7 thresholds (Tavakol & Reg, 2011). The Likert scale in section B yielded an alpha value of 0.757 while the Likert scale in section C had an alpha value of 0.815 suggesting that the scales had an acceptable level of reliability. The drop-off and pick-up strategy was used to distribute the pre-tested questionnaires in the selected government ministries.

The gathered data was sorted and entered into the statistical package for social sciences (SPSS) where it was analysed using both descriptive and inferential statistics. Inferential analysis was done using the multiple linear regression method. The following regression model was tested:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon,$$

Where,

Y is delivery of e-government services;  $\beta_0$  is constant (coefficient of intercept);  $\beta_1$ , is the beta coefficient for technical capacity;  $X_1$  is Technical Capacity, and  $\varepsilon$  is Error term.

## FINDINGS AND DISCUSSION

Out of the 144 ICT staffs that were issued with questionnaires, 118 were able to complete their questionnaires and return them to the researcher. This figure translates to a response rate of 81.9%. According to Mugenda and Mugenda (2003), a questionnaire return rate of more than 70% in a descriptive study is excellent. Wiseman (2003) also explained that a high response rate reduces non-response bias.

## Respondents Demographic Information

The respondents background was assessed in terms of their gender, age, number of years worked in their respective ministries, and highest education level. This information is summarized in Table 2.

Table 2: Respondents Demographic Profile

Demographic Characteristics	Categories	Frequency	Percentage
<b>Gender</b>	Male	66	55.9
	Female	52	44.1
<b>Age</b>	Below 20 years	2	1.7
	20-29	24	20.3
	30-39	48	40.7
	40-49	36	30.5
	50 years and above	8	6.8
<b>Years of Service</b>	Less than 1 year	10	8.5
	1- 5 years	47	39.8
	6-9 years	22	18.6
	10 years and above	39	33.1
<b>Highest Education Level</b>	Secondary	2	1.7
	Diploma	10	8.5
	Bachelors' Degree	61	51.7
	Masters' Degree and above	45	38.1

Out of the 118 respondents who completed the study, 66 were male representing 55.9% of the sample while 52 were female representing 44.1% of the sample. In terms of age, the largest proportions of respondents (40.7%) were in the 30-39 years age bracket. Other age categories were also represented in the sample. Regarding years of services in respective organizations, the largest proportion of respondents (39.8%) had worked in their respective ministries for 1-5 years. Only 8.5% had worked in their respective ministries for less than 1 years at the time of study suggesting that 91.5% of the respondents had stayed in their worked station long enough to provide informed opinion regarding the status of the ministries with regard to the variables of the study. Pertaining to education level, the majority of the respondents (51.7%) had the bachelors' level of education while another 38.1% had the masters' level of education. This implies that 89.8% of the respondents had attained a minimum of bachelors' degree level of education. This distribution is however logical since the study targeted ICT staff within the

government ministries, which are highly technical positions that recruit individuals with high levels of education.

### Delivery of E-services in Selected Ministries

Delivery of e-services was the dependent variable of the study. Therefore, the study sought to establish the effectiveness of the ministries in delivering e-government services. In line with this goal, participants were presented with seven statements related to e-government service delivery and asked to indicate their level of agreement with each statement on a five-point scale (1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, and 5 = strongly agree). Results are summarized in Table 3.

Table 3: Descriptive Statistics for Delivery of E-Services in the Ministries

ID	Statement	N	Mean	S.D
1	Large number of our services are available on electronic platforms (internet, SMSs, website etc)	118	3.79	.761
2	Most of our services transactions are done through electronic platforms.	118	3.68	.876
3	The level of engagement between the organization and service users has increased after the introduction of e-services.	117	3.86	.730
4	Lengths of customers' queues have declined after introduction of e-services.	118	3.71	.818
5	The cost of delivering services has gone down since the introduction of e-services.	118	3.71	.828
6	Most of the processes (Finance, human resource management, and our core function) within the organization have been digitized.	118	3.68	.876
7	The level of our customers' satisfaction has increased after the introduction of e-services.	118	3.69	.713
<b>Aggregate E-service delivery score</b>		<b>118</b>	<b>26.08</b>	<b>4.029</b>

As shown in Table 3, Item 3 had the highest mean score of 3.86 suggesting that on average, respondents agreed that that the level of engagement between their organization and service users has increased after the introduce of e-services. This finding reinforces an earlier study by Siddiquee and Mohamed (2015), who also observed that the implementation of e-government programs in Malaysia transformed the mode of service delivery as well as interaction between the people and their government. There was increased and more transparent interaction between the government and citizens after the implementation of the e-services.

The finding also reinforces NPT theory which contends that new technologies are more likely to be institutionalized when they confer interactional advantage to users (Hooker *et al.*, 2015).

Item 1 had the second highest mean of 3.79 also suggesting that on average respondents pretty much agreed with the claim that a large number of services in their ministries are available on electronic platforms. This finding is consistent with the survey by the UN Department of Economic Affairs (2014), which showed that Kenya and Morocco are the frontrunners in digitization of government services. The findings are also consistent with the study by Kariuki (2015), who found that the increased proliferation of mobile phones and internet services in the country has compelled many government ministries to deploy SMS services and develop mobile application to facilitate electronic government uptake. The study also found that digitization of government services had also been propelled by the rise in use of mobile payment services such as Mpesa as well as political goodwill in Kenya where recent regimes have shown support towards promoting ICT use in governance.

Items 2 and 6 had the lowest mean scores of 3.68. Nonetheless the mean scores round-off to 4 and thus indicate that on average respondents agreed with the statements. In item 2, respondents agreed that most of the service transactions in their ministries are done through electronic platforms. The fact that item 2 had lower mean score than item 1 suggests that although the ministry have most of their services available on electronic platform, not all users go through the electronic platform to access the services. In item 6, respondents on average agreed that most of the processes such as finance and human resource management within their ministries have been digitized. The level of agreement with this claim was however weaker than that recorded on other items.

An aggregate e-service delivery score was obtained by summing up respondents' ratings of each of the seven items used to measure e-service delivery. As displayed on Table 3, the mean aggregate score for e-service delivery was 26.08 out of a highest possible score of 35 (7 items \* 5 maximum score in the scale). Thus, based on the seven items on the e-service delivery scale, respondent rated the overall delivery of e-services by the ministries at 74.5% (26.08/ 35 \* 100). To establish the existing status with regard to delivery of e-services in each ministry, the mean aggregate e-service delivery score were computed for each ministry as shown in Table 4.

Table 4: E- Service Delivery Score for each Ministry

<b>Ministry</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Education	23	28.57	2.858
ICT	6	24.33	5.645
Public Service ,Youth and Gender	9	24.89	2.619
Agriculture, Livestock and Fisheries	13	23.92	5.057
Health	8	26.75	2.816
Lands and Physical Planning	12	25.50	3.119
Transport and Infrastructure	10	27.00	4.497
Treasury and Planning	15	26.00	4.520
Interior and Coordination	14	26.71	1.858
Labour and Social Protection	8	23.25	5.392
<b>Total</b>	<b>118</b>	<b>26.08</b>	<b>4.029</b>

As revealed in Table 4, the Ministry of Education had the highest mean score of 28.57 suggesting that as per the respondents, this ministry is the best performing in terms of the delivery of e-services. The Ministry of Transport and Infrastructure had the second highest mean score (mean=27.00) followed by the Ministry of Health (mean= 26.75). The Ministry of Labour and social protection had the lowest mean score of 23.25 suggesting that as per the respondents this ministry did not perform as well as other ministries when it comes to delivery of e-services. The ministries of Agriculture, Livestock and Fisheries, ICT, Public Service, Land and Physical planning, and Treasury and Planning also had e-service delivery scores that are lower than the average score for all ministries suggesting that their performance in terms of delivery of e-service was below average.

### **Technical Capacity in Selected Ministries**

Technical capacity was the independent variable of the study. The term referred to staff ability to use e-government approaches to deliver services. To assess the technical capacity of the ministry, respondents were presented with a set of six statements and asked to indicate their level of agreement with each statement on a five-point scale. Results are presented in the Table 5.

Table 5: Descriptive Statistics for Technical Capacity

ID	Statement	N	Mean	S.D.
1	Most of the organization's employees have basic computer skills	118	4.31	.547
2	Most employees can interact with the applications that support e-government initiatives	118	4.14	.543
3	Employees were consulted during planning and when implementing the e-government initiatives	118	3.58	.891
4	E-government initiatives introduced by the organization have added value to the service delivery process	118	4.07	.609
5	E-government initiatives introduced by the organization have made my work easier	118	4.00	.692
6	I believe that e-government initiative has added value to the organization	118	4.08	.648
<b>Aggregate Technical Capacity</b>		<b>118</b>	<b>24.18</b>	<b>2.691</b>

As exemplified in Table 5, item 1 had the highest mean score of 4.31 suggest that on average there was a high level of agreement among respondents with the claim that most of the employees in their organizations/ ministries have basic computer skills. Computer literacy among government employees is a major enabler of e-service delivery. As Alshehri *et al.* (2012) observed, computer literacy among staff tend facilitate effective implementation of e-service as it reduces the level of employees' resistance to e-government initiatives.

Item 2 had the second highest mean of 4.14 also suggesting that there was a high level of agreement among respondents with statement that most employees in their ministries can interact with the applications that support e-government initiatives. This statement is closely related to item 1 and reinforce the earlier finding that most employees in the ministry have basic ICT skills. Employees' ability to interact with the e-service application is expected to have major influence on e-service delivery as employees cannot deliver the services effectively when they do not have mastery of the e-platforms.

Item 3 had the lowest mean of 3.58 suggesting that there was a relatively low level of agreement among respondents with the assertion that employees were consulted during the planning and implementation of the e-government initiatives. This finding raises concern as evidence from studies conducted in other settings suggest that active involvement of employees in the design and implementation of e-government programmes tend to enhance the effectiveness of e-service delivery. The study by Nurdin *et al.* (2011) observed that for e-government to be successfully implemented, government agencies need to realize internal integration, which is identification by the organization's people. Internal integration is best

realized when employees are actively involved in the advancement and execution of e-government projects.

Item 5 had the second lowest mean of 4. This signifies that respondents' level of agreement with this statement was not as high as in other statements. A mean value of 4 however suggest that on average respondents pretty much agreed with the statement that e-government initiative introduced by the government has made their work easier. This item sought to assess the respondents' attitude towards the e-government initiatives implemented in their ministries. The item is in line with the study by Alshehri *et al.* (2012) where it was observed the willingness to embrace e-ways by government workers in Saudi Arabia was influenced by various factors including the workers' perception regarding the value of such services.

The mean aggregate score for technical capacity for all ministries was 24.18 out of a highest possible score of 30 (6 items \* 5). This implies that based on the six items in the technical capacity scale, respondents rated the technical capacity of ministry staff to implement e-services to be 80.6% ( $24.18/30 * 100$ ). To establish the technical capacity of staff in individual ministries, the mean aggregate technical capacity score was computed for each ministry as shown in Table 6.

Table 6: Technical Capacity Score for Individual Ministries

Ministry	N	Mean	S.D
Education	23	24.74	2.094
ICT	6	25.50	1.871
Public Service Youth and Gender	9	23.11	3.790
Agriculture, livestock & Fisheries	13	21.31	2.359
Health	8	24.38	1.506
Land and Physical Planning	12	23.75	1.138
Transport and Infrastructure	10	24.30	2.710
Treasury and Planning	15	24.33	2.743
Interior and Coordination	14	25.00	2.112
Labour and Social Protection	8	26.00	4.106
<b>Total</b>	<b>118</b>	<b>24.18</b>	<b>2.691</b>

From Table 6, the Ministry of Labour and social protection had the highest score for technical capacity (mean= 26) suggesting that according the available data, these ministries had the highest level of technical capacity to implement e-services. The Ministry of ICT had the second highest score (mean= 25.50) followed by the Interior Ministry (Mean= 25). The Ministry of Agriculture livestock and fisheries had the lowest mean score of 21.31 suggesting that it had the

lowest level of technical capacity to implement e-services followed by the Public Service, Youth and Gender Ministry. The ministry of Land and physical planning also had a mean score that was below the average score for all ministries suggesting that its technical capacity was also below average.

### Influence of Technical Capacity on E-Government Service Delivery

Regression analysis was conducted to assess the influence of organizational technical capacity on e-government service delivery. Results are summarized in Table 7.

Table 7: Regression Analysis Results

Variable		r	r <sup>2</sup>	Constant	F	P
Dependent	E-Government Service Delivery	.373	.139	12.581	18.754*	.000
Independent	Organizational Technical Capacity		Beta	Standardized Beta	t	
			.559*	.373	4.331*	.000

As shown in Table 7, the model had an r-square value of 0.139 suggesting that organizational technical capacity explained 13.9% of changes observed in the delivery of e-services by the selected ministries. Although the largest proportion (86.1%) of the changes in delivery of e-services remain unexplained, a predictive power of 13.9% is considered acceptable for a social phenomenon such as e-service delivery. As Bryman (2016) explained, social phenomena are influenced by a large multitude of dynamic variables and thus a high r-square value is not expected.

The model had an F-value of 9.818 and significance value of less than 0.001. The F-test in regression analysis usually examined whether the independent variables in the model have a statistically significant effect on e-service delivery by the ministries. Since the significance value is less than 0.001, it implies that organizational technical capacity has a statistically significant effect on e-service delivery by the ministries. This result was reinforced by the regression beta coefficient.

From Table 7, technical capacity had a beta coefficient of 0.559. Since this coefficient is positive, it implies the existence of a positive relationship between technical capacity and e-service delivery by the ministries. Particularly, the beta implies that if the technical capacity of the ministry is improved by 1 unit, delivery of e-services would improve by 0.559 units. The significance value for technical capacity is less than 0.001, which indicates that the relationship



between technical capacity and e-service delivery is statistically significant. These findings led to the conclusion that technical capacity has a positive and statistically significant influence on e-service delivery by the selected government ministries.

These findings reinforce an earlier study by Al-Shboul *et al.* (2014), who also found that lack of competent workforce and inadequate human resource training were a significant hindrance to the successful implementation of e-government services in Jordan. The findings also underpin the study by Sefeena and Kammani (2013), who also found that technical staff capacity was significantly associated with successful operation of electronic services within government establishments in South Africa. Alshehri *et al.* (2012) also found that government workers' opposition to change to e-ways hampered the integration process for the services in Saudi Arabia. Resistance of e-governance was attributed to various factors including limited awareness and computer illiteracy.

Based on the regression findings, the solved model becomes:

$$Y \text{ (Delivery of e-Government services)} = 12.581 + 0.559 \text{ (Technical Capacity)}$$

## CONCLUSION AND RECOMMENDATIONS

Findings led to the conclusion that technical capacity has a positive and statistically significant influence on delivery of e-service by government ministries in Kenya. Ministries that have strong technical capacity in terms of having employees with basic computer skills, involving employees in developing and implementing e-government programmes, and having employees who perceive the benefits of e-government initiative are likely to be more effective in delivering e-services. The study also concludes that technical capacity has the strongest influence on e-service delivery among the four factors under consideration based on the beta coefficient results. The item assessing whether employees are consulted during the planning and implementation of e-government initiatives had the lowest mean score. This finding suggests that there may be a lack of adequate involvement of employees in the planning and implementation of e-government programmes. To improve the delivery of e-services, ministries should increase the involvement of their staffs in the design and implementation of e-government programs. Employees should be allowed to share their concerns, contribute ideas, and participate in implementation of e-government programs so as to create a sense of ownership in the platforms. The ministries should also train their staff on ICT use. Employees should also be enlightened about the benefits of the e-government programmes. More effort should be directed towards improving the technical capacity of agriculture and public service ministries as these had the lowest technical capacity scores.

The current study examined the influence of organizational technical capacity on delivery of e-services by government ministries. As highlighted by the r-square value, this factor does not provide a comprehensive explanation of the ministries performances in terms of delivering e-services. Future studies should explore other factors that may have an influence of e-service delivery such as security and privacy, financial benefits, operational benefits, and political goodwill, legislative support, and leadership support.

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