

Determinants of e-Government Adoption in Improving Public Services Delivery in Immigration Department Arusha Region, Tanzania

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Abstract: *The paper assesses the determinants of the e-Government in improving public service delivery in Arusha Regional Immigration Office, Tanzania. It is a descriptive research designed to adopt the survey method using the questionnaire and interviews. A sample 60 respondents was used. The data was analysed using the descriptive and inferential methods. The study finds that infrastructure especially Information Technology influences the way e-Government has improved the public services delivery in Immigration Department in Tanzania. This suggests that the efficiency and effectiveness of the public service delivery are significantly related to e-Government. The study recommends that there is need to improve on e-Government infrastructure in order to improve public services delivery especially in immigration such as online payments, applications of e-passport, e-visa, and e-permit. It is also recommended that the information security policy and guidelines should be put in place at Government policies in order to make sure the benefits of e-Government are realized fully.*

Keywords: e-Government, Public Service Delivery, Online Payments, e-Passport, e-Visa, and e-Permit

1. Introduction

E-Government is defined in relation to the government's extension of its services to its own entities, citizens, agencies, and business partners by the use of ICT [2]. By extension, therefore, e-Government is an opportunity of interaction that results in availing services near to users and a conducive environment for business in the country by the use of such facilities as Local Area Networks (LAN), Wide Area Networks (WAN), Wireless Networks (WN), and Virtual Private Network (VPN). The enabled E-environment provides a well-organized and effectual government information management system with the purpose of effective and efficient services delivering to the public [25].

The ICT is progressing very fast in both private and public domains so much that it creates a huge pressure to the public sector to resort to e-Government service delivery [10]. Because of this, governments all around the world are making efforts seeking to use ICT in making the information and services delivery more effective and efficient. In order to achieve the objective, one of the items that is always on the agenda of many governments is to transform the conventional manual way of delivering information and services by adopting ICT [1]. In the US, for example, the Internal Revenue Service (IRS) saves millions of dollars annually by decreasing spending on printing, sorting, and mailing tax materials through offering taxpayers web access to tax return forms and publications. Online services introduce readily available and more efficient payment methods that minimise travel and waiting times, and improve transparency of government's operation. The net effects are improved governance and reduction of systemic corruption that lead to the governance transformation.

In order to reduce the malfunctioning in the government services and achieve the e-Government benefits, Tanzania

government established the e-Government procedures through the National ICT Policy in 2003 that was revised in 2016 [26]. Ten years later, the government commenced to invest and develop the electronic service system aiming at increasing willingness, confidence, and trust, to the stakeholders of government's services. The government of Tanzania acknowledges the power, the benefits and the major role played by ICT in development of strategic plans. This has prompted the government through its various organs to launch the e-Government initiatives.

The e-Government can be related to various reform programmes that are targeting the public service delivery improvement in the government cycles [13]. In spite of this fact, e-Government has not been recognised as one of indispensable enabling component in the government's effort to successfully deliver services to the public. The government, however, did an e-Government situation analysis through a countrywide survey and from that, simultaneously developed an e-Government strategy and launched an e-Government agency in order to both oversee and synchronize the related initiative. It is through such initiatives that the government has achieved some notable e-Government progress in establishing electronic systems such as government and recruitment portals, revenue collection systems, national identity system for the citizens, e-immigration systems like E-passport, E-Visa, and E-permits.

Various studies on e-Government adoption have been carried out in developing and developed countries. The studies on the adoption of the e-Government have been done in many countries but the findings are mix ([21] and [12]). The studies done in Tanzania show the limitations that Tanzania is facing in the course of implementing the e-Government systems. Such constraints that affect people with low income and those living in rural areas are inaccessibility of internet service and poor infrastructure such as unreliable electric supply [19]. The implementation

of e-Government system in Tanzania is further complicated by scanty studies of factors that influence e-Government adoption, especially in Tanzania Immigration Department. This paper therefore attempts to assess the factors that determine the e-Government adoption in Tanzania Immigration Department in order to improve public service delivery.

The paper specifically examines the state of affair of electronic infrastructure in immigration offices in Arusha Region. It also investigates the characteristics of e-Government users in immigration offices in Arusha Region. Finally, the paper examines the e-Government strategy's perceived benefits on public service delivery in immigration offices in Arusha Region.

2. Theoretical Framework and Literature Review

2.1 Theoretical Framework

Various theories have been used in explaining and predicting users' adoption and acceptance of technologies related to the e-Government. Some of the proposed technology acceptance theories include Theory of Reason Action (TORA), the Theory of Planned Behaviour (TPB), and the United Theory of Acceptance and Use of Technology (UTAUT) ([2]; [27]). Others are the Diffusion of Innovation theory (DOI) and the Theory and Technology Acceptance Model (TAM) ([7]; [23]). This paper utilizes DOI and TAM as the theoretical foundation in providing useful insights in understanding the users' behaviour related to the utilisation of e-Government services. [16] claim that the TAM theory has Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) as two main beliefs driving users into technology acceptance. These beliefs are assumed to influence both the user's intention and drive to make the actual use of the system.

2.1.1 e-Government Adoption and TAM Theory

The acceptance, use and adoption of the e-Government services has traditionally been explained by applying Technology Acceptance Model (TAM). [22] made a study on the readiness to accept and use e-Government services in Sri Lanka and found that trust is one of the main factors. [15] applied TAM in studying e-Government services adoption and found out that the success factors were system quality, information quality, and social influence. While testing the main constructs of TAM, Cegarra-Navarro J., et al. [n.d] found that users attitudes, the PU, PEOU, were the main factors that influence the use of e-Government services. The study of the way teachers in Greece adopted the e-Government revealed that there are intrinsic and cognitive factors that significantly influence both the intention and use of e-Government websites [28].

Studies made in Saudi Arabia found that the user attitude, service system awareness, the perceived benefits, associated policies and regulations, as well as the previous experience are important factors determining the use of e-Government ([4] and [3]). TAM was adopted also in Malaysia to examine the users acceptance of e-Government services and found that several factors were responsible. Such factors were such as PEOU, PU, system compatibility, intrinsic and extrinsic

factors. Intrinsic factors were self-efficacy and attitude, while extrinsic ones were interpersonal influence, facilitating conditions, and subjective norms [24].

[14] applied TAM to study the e-Government services adoption in Tanzania and concluded that one of the main adoption factor is social influence. TAM theory can therefore be used as a framework to understand the perceived benefits as one of main factors that influence adoption of e-Government delivery by public service. [23] emphasizes that in order to explain the electronic system users' characteristic caused by the system compatibility and relative advantage, TAM is supported by DOI theory. It asserts that user's perceptions on system's merits over another and such system attributes as observability, complexity, compatibility, and testability, completely determine the behaviour towards technology adoption [23].

2.2 Empirical Reviews

2.2.1. Status of e-Government Infrastructure

[1] argued that e-Government adoption is affected by the website design that provides perceived ease of use and perceived usefulness. Therefore, ICT must be considered practically as the first step to be prepared for the e-Government adoption. ICT infrastructure provides the foundation for establishing the services in e-Government adoption. [12] conducted a study to determine the status of government websites of Kenya, Tanzania and Uganda using establishment year, visibility and usability attributes. The results revealed that there were more interactivity features for Tanzanian and Ugandan websites than Kenyan websites and it adopted concluded that all of the East African websites were at the first and second stages of the website development and corresponding e-Government services. The other findings show that CT infrastructure, specifically modern computers connected to internet, reliable internet speed, well organized organization website, and power availability in public operations, contributed to efficient delivery of services [9]. In Kenya, it was also shown that infrastructure was main factor which affects successful adoption of e-Government in the country's public sector [20].

2.2.2. User Characteristics of e-Government

A number studies have found significant interaction effects between certain characteristics of online users (e.g. Internet experience) and various online strategies (e.g. personalization, customization, and community) ([1], [3], [11]). [6] argue that citizen's trust of e-Government is influenced by the user's satisfaction. If the user has a prior satisfied experience, he will be more likely to repeat the e-Government services use than inexperienced and unsatisfied one. The variables used to measure Internet experience include duration of experience frequency of use and usage pattern.

[8] argue that the adoption of e-Government is determined not only by innovations but also user characteristics. User-related issues refer to issues concerning the recipient targeted by e-Government initiatives. Theories in this category suggest that user issues play an important role in users' decisions to adopt e-Government initiatives ([8].

Examples of such issues include user definition (e.g. young/old), aspiration (e.g. recognition), expectations (e.g. productivity) and/or possession (e.g. money). In this regard, it can be hypothesized that e-Government innovation that meet users' characteristics will achieve a high adoption rate. For instance, introducing easy to use initiatives may attract adoption of even citizens with limited ICT skills. It is also possible to hypothesize that influencing relevant user characteristics may impel users to adopt a new e-Government initiative.

Studying in China situation, [18] also applies TAM in looking at the factors that influence adoption and use of e-Government services and concluded that there is a significant positive impact by system users' adoption intention and the actual use of e-Government services. The perceived usefulness was found to have insignificant positive impact on citizens' intention to use e-Government services. The study made in the USA to examine the socio-psychological factors' effects on the adoption of e-Government by combining two TAM and DOI theories identified that perceived usefulness, uncertainty, and civic-mindedness were the major adoption factors. These findings showed that in the USA context, the perceived usefulness, uncertainty and risks as well as prior interest in government were related to the adoption of e-Government ([8]). Studies which were also done in Taiwan, Gambia and Pakistan find the same factors which affect the adoption of e-Government ([11]; [17]; and [5])

2.2.3. Perceived Benefits

[5] established the extent to which perceived usefulness correlated with e-Government adoption in Uganda Revenue Authority. The results indicated a significant relationship between perceived usefulness and e-Government adoption. The findings provide evidence on the effects of perceived benefits of e-Government on service delivery. However, there are no studies which have been done in the immigration department in Tanzania. In this regard, this study focuses on the perceived benefits of e-Government strategy on public service delivery in immigration offices in Tanzania.

Perceived benefits in the TAM model originally referred to job related productivity, performance, and effectiveness [7]. This is an important belief identified as providing diagnostic insight into how user attitudes toward using (and intention to use) are influenced; perceived usefulness or benefits has a direct effect on intentions to use over and above its influence via attitude ([7]; [3] and [11]). Incorporating concepts used in Expectancy Theory, [7] proposed that an important factor influencing behaviour is the expected consequences of the behaviour. Perceived usefulness adopted found to be significant constructs in the e-Government adoption literature.

2.2.4. Service Delivery

The delivery of services in government departments has been and continues to draw attention from the external and internal environment. Service delivery is affected by various factors such as remuneration of its workforce, training, promotional procedures, and culture of the systems and among other factors ([6]). However, it is important to note that Service delivery in government ministries is highly

depended on information-technology or e-Government and the skills and knowledge of the employees who work in those ministries. Despite the existence of these ministries, the service deliveries they offer are questionable. [6] notes that there is a lack of transparency, efficiency, and unsecure delivery of services. In the same vein, [9] notes that the process of implementing e-Government solution requires new management and technical skills to plan, evaluate, manage, finance and integrate information systems as part of government operations. Information Technology (IT) skills are technical skills necessary to implement e-Government in order to facilitate smooth service delivery through improved information management [1].

2.3 Conceptual Framework

The conceptual framework in this work is structured from a set of broad ideas, models and theories that focus on the role of e-Government in the delivery of public services. The proposed model follows the TAM and DOI to explain the intention towards the actual use of e-Government website with infrastructure, user characteristics and perceived benefits as e-Government adoption determinants on improving service delivery. This relationship is clearly indicated in the conceptual framework presented in Figure 1.

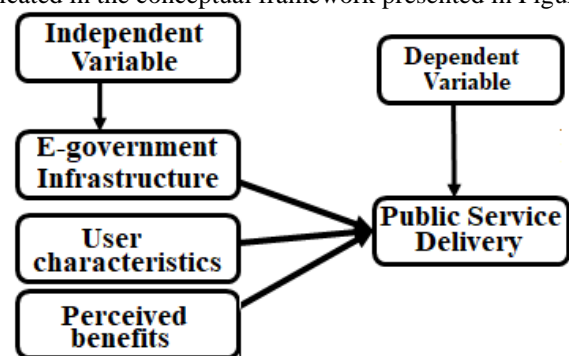


Figure 1: Conceptual Framework Model

2.4 Critique of the Existing Literature Relevant to the Study

In public sector investment, e-Government has been researched extensively. There is an increased use of IT in most organizations, ranging from government, formal, and informal sectors of the economy. Many organizations, both national and international, are transacting online with improved technological development and innovation. However, the available literature does not provide enough evidence concerning the effectiveness of e-Government in public sectors. Most of them are dwelling on single business unit performance, providing a general descriptive of IT without an in-depth analysis of the same. Such shortfalls in the available studies justify this study.

2.5 Research Gap

The available literature focuses on e-Government adoption ([12]; [9]; [20]). This paper contributes to the body of existing literature on e-Government by examining the status of e-Government infrastructure, user characteristics, and perceived benefits of e-Government on service in improving the delivery of public services in Tanzania.

3. Sample and Methodology

3.1 Sample

A sample of 60 immigration officers in Arusha region was used in the study. The sample is distributed as shown in Table 1.

Table 1: Sample Distribution

Office	Arusha Regional Office	Namanga Border	Karatu District	Monduli District	Total
Sample Size	25	29	4	2	60

3.2 Data collection Methods and Instruments

Data collection for the study involves interviews and questionnaire. The questionnaire was used to gather data about demographic information, status of e-Government infrastructure, user characteristics and perceived benefits of e-Government services.

3.3 Data Processing and Analysis

The study adopts descriptive and inferential data analysis methods for data collected from the field. Descriptive statistics included frequency and percentage distribution. The study also employs inferential statistics such as regression analysis to tests the relationship between the identified variables (infrastructure, perceived benefits and user characteristics) of e-Government adoption and public service delivery.

4. Empirical Results

4.1 Status of e-Government Infrastructure on Service Delivery

The study examined the extent of how the status of e-Government infrastructure improve public service delivery specifically in immigration department. The study findings shows that the majority of respondents, 51.7%, agreed that status of e-Government infrastructure improve delivery of public services especially e-passport, e-visa and e-payments. It was also found that there is reliable network, government provides adequate facilities and government provides technical know-how knowledge necessary to use e-Government system. The responses on e-Government infrastructure are shown in Table 2.

Table 2: Status of E-government Infrastructure on Service Delivery

Category	Frequency	Percent
Strongly Disagree	1	1.8
Disagree	12	21.4
Undecided	14	25.0
Agree	25	44.6
Strong Agree	4	7.1
Total	56	100.0

4.2 User Characteristics of e-Government on Service Delivery

The responses on the user characteristics of e-Government are shown in Table 3. The results show that 57.1% of the respondents agreed that user characteristics of electronic government improve service delivery. These study findings are consistent with [8] who found that performance expectancy, effort expectancy, facilitating conditions and social influence are the factors that affect the user's adoption of e-Government services in Pakistan. Similar findings were also observed by [17] in Gambia. Studies by [11] also found significant interaction effects between certain characteristics of online users (e.g. Internet experience) and various online strategies (e.g. personalization, customization, and community).

Table 3: User Characteristics of e-Government on Service Delivery

Category	Frequency	Percent
Disagree	3	5.4
Undecided	14	25.0
Agree	32	57.1
Strong agree	7	12.5
Total	56	100.0

4.3 Perceived Benefits of e-Government Strategy on Service Delivery

The responses on perceived benefits of e-Government Strategy on Service Delivery, which are reported in Table 4, show that majority of the respondents agree that there are perceived benefits of e-Government Strategy on Service Delivery. These study findings pointed out that e-Government provides the precise government information, it is cost and time saving, provides online payment system, improve effectiveness and efficiency, provides accurate, reliable and relevant information and helps to handle data more securely. The findings are consistent with [18] and [5]. The results indicate a significant relationship between perceived usefulness and e-Government adoption. The findings provide evidence on the effects of perceived benefits of e-Government on service delivery.

[11] also found out that online services are costless, faster and more readily available (24/7). They also reduce travel and waiting time, introduce a more efficient payment methods, improve transparency of government's operation, improve governance and reduce systemic corruption, and eventually lead to the transformation of governance.

Table 4: Perceived Benefits of E-government Strategy on Service Delivery

Category	Frequency	Percent
Strongly Disagree	1	1.8
Disagree	2	3.6
Undecided	15	26.8
Agree	33	58.9
Strong Agree	5	8.9
Total	56	100.0

4.4 Relationship between Status of e-Government and Service Delivery

The relationship between the status of e-Government and Service Delivery was tested using the regression analysis and the results are reported in Table 5(a) and (5b). The results show that e-Government infrastructure had a strong positive relationship with public service delivery. The results also indicated that e-Government infrastructure accounts for 64.4 percent of the public service delivery in immigration department.

Table 5 (a): Model Summary of Status E-government and Service Delivery

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.803 ^a	.644	.638	.457

Table 5(b) shows that the F-value is 97.860 with p-value=0.000. It can therefore be concluded that the e-Government infrastructure in service delivery is statistically significant at 95 percent confidence level.

Table 5(b): ANOVA Tests of Status e-Government and Service Delivery

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	20.437	1	20.437	97.860	.000 ^b
Residual	11.277	54	.209		
Total	31.714	55			

These findings are supported by [3] who found that ICT infrastructure provides the foundation for establishing the services in e-Government. Similarly, [9] found that there is a positive relationship between ICT infrastructure and delivery of services.

4.5 Relationship between User Characteristics of e-Government and Service Delivery

The paper also examines the relationship between user characteristics of e-Government and Service Delivery. The results of the regression analysis are reported in Tables 6(a) and 6(b). The results indicate that there is a significant relationship between user characteristics and improving public service delivery.

Table 6(a): Model Summary of User Characteristics and Service Delivery

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.727 ^a	0.529	0.52	0.526

a. Predictors: (Constant), User Characteristics

Table 6(b): ANOVA Tests of User Characteristics and Service Delivery

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	16.778	1	16.778	60.659	.000 ^b
Residual	14.936	54	0.277		
Total	31.714	55			

b. Dependent Variable: Public service delivery

4.6 Relationship between Perceived benefits of e-Government and Service Delivery

The study tested the relationship between Perceived benefits of e-Government and public Service Delivery and the results are shown in Table 7(a) and 7(b). The results show that there is positive strong contribution between Perceived benefits of e-Government and public Service Delivery. The study results conforms to technology acceptance model developed by [7] by which postulate that the adoption of certain technology is influenced by its perceived benefits of using it.

Table 7(a): Model Summary of perceived benefits and Service Delivery

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.809 ^a	.655	.648	.450

a. Predictors: (Constant), Perceived Benefits

Table 7(b): ANOVA of Perceived benefits and service delivery

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	20.768	1	20.768	102.444	.000 ^b
Residual	10.947	54	.203		
Total	31.714	55			

a. Dependent Variable: Public Service Delivery

In conclusion, based on descriptive statistics analysis the results revealed that e-Government infrastructure, user characteristics and perceived benefits are among of the determinants of e-Government in improving public service delivery.

5. Conclusion and Recommendation

5.1 Conclusion

The objective this study was to assess the determinants of e-Government in improving public service delivery in Arusha Regional Immigration Office, Tanzania. It has been found that the status of e-Government infrastructure improves delivery of public services especially e-passport, e-visa and e-payments. It was also found that there is a positive relationship between e-Government infrastructure and public service delivery. Furthermore, there is strong evidence that user characteristics of e-Government improves service delivery. Finally, the paper finds that there is a significant relationship between Perceived benefits of E-government and public Service delivery.

5.2 Recommendations

The study recommends that government should continue to focus on improving infrastructure necessary for e-Government services so that users to have access to Internet connectivity at affordable rates and this can be succeeded by government levying some costs to allow providers lower their prices. It is also recommended that the government should continue to provide awareness and training to users on the benefits of the using e-Government services especially immigration services like applications of immigration related documents such as e-permit, e-passport, and e-visa, as well as online payments. Finally, it is

recommended that the guidelines and policy for information security be put in place that should be followed by everyone, and the government needs to improve e-Government policies that guides the way e-Government activities should be conducted.

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