
Contributing Factors Leading To Delay Of Fully Implementation Of E-Services Delivery Across All Government Institutions: A Case Of National Information Technology Authority, Kampala, Uganda

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Abstract

The study explores the implementation of e-government initiatives in Uganda, highlighting the significance of comprehensive frameworks in achieving efficiency and citizen satisfaction. It established the contributing factors leading to delay of fully implementation of e-services delivery across all government institutions. The descriptive survey design was used to systematically observe, analyze, and describe the current state of e-service implementation in Uganda. The study population is delineated to 100 participants which included; 45 ICT users who have interacted with government e-services, 17 government officials directly involved in the implementation of e-services, and 38 IT professionals responsible for maintaining the technological infrastructure. This comprehensive approach ensures a multifaceted exploration of perspectives. The findings indicate a consistently high mean scores in this domain showcase NITA-U's positive influence on government e-services (strong correlation $r = 0.98$) and significant regression coefficient (t -statistic = 6.12, $p < 0.05$) between NITA-U's perceived impact and the overall improvement in e-service systems further validate its pivotal role. The study concluded that a limited digital literacy and inadequate funding emerged as substantial barriers. Therefore, it was recommended that collaboration between NITA-U and relevant stakeholders should be improved; and educational initiatives for improving digital literacy and advocating for increased funding for e-service projects are vital for overcoming current barriers.

Keywords: Digital literacy, e-government, e-service projects, government institutions.

Introduction

Extending the theoretical lens to the Unified Theory of Acceptance and Use of Technology (UTAUT) enhances our understanding of the complexities involved in technology adoption. UTAUT integrates various technology acceptance models, emphasizing key factors such as performance expectancy, effort expectancy, social influence, and facilitating conditions. Recent work by Johnson and Lee (2021) applied UTAUT to assess the adoption of e-services in developing countries. Their findings underscored the relevance of social influence and facilitating conditions in the acceptance of e-services, providing valuable insights for the Ugandan context. By incorporating recent research data from these authors, our study can deepen its theoretical underpinnings and offer a nuanced perspective on the factors influencing the acceptance and use of e-services, especially in the context of NITA-U's initiatives.

In Uganda, where NITA-U plays a pivotal role in coordinating and regulating IT services, an exploration of the conceptual underpinnings of e-government frameworks can provide valuable insights into the potential challenges and opportunities for improving service delivery.

Recent research by Chen et al. (2022) emphasizes the need for e-service platforms to prioritize user experience through intuitive design and accessibility. The study investigates the correlation between user-centric design principles and

citizen satisfaction in the context of e-governance. This conceptual perspective aligns with NITA-U's efforts to streamline processes and enhance accessibility. By integrating recent findings from Chen et al., our study can delve into the conceptual intricacies of designing e-services that cater to the diverse needs and expectations of citizens.

Recent work by Garcia and Kim (2022) delves into the challenges and best practices of ensuring data security in e-government systems. As NITA-U manages critical initiatives such as the National Data Centre, understanding the conceptual foundations of data security becomes imperative. Incorporating Garcia and Kim's insights into our study allows for a comprehensive examination of how NITA-U's strategies align with contemporary research on safeguarding citizen data.

Recent research by Ahmed et al. (2023) explores the role of e-government in fostering digital inclusion. The study emphasizes the importance of ensuring that e-services are accessible to all citizens, irrespective of socio-economic factors. This conceptual perspective resonates with NITA-U's goal of bridging the digital divide. By integrating Ahmed et al.'s findings, our study can explore how NITA-U's initiatives contribute to or challenge the broader conceptual frameworks of digital inclusion in e-service delivery.

Recent research conducted by Ochieng *et al.* (2023) focuses on the impact of shared infrastructure initiatives, like EFTTV, on rural connectivity. This study reveals that while there has been significant progress in extending electricity and ICT infrastructure to rural areas, challenges such as intermittent power supply still persist in some regions (Ochieng *et al.*, 2023). This aligns with the local perspective of our study, highlighting the practical implications of such initiatives managed by NITA-U. Incorporating insights from Ochieng et al. enables a detailed exploration of how shared infrastructure influences the accessibility and utilization of e-services in rural communities. Ugandan scholars Kato and Nankya (2022) delve into the implications of establishing centralized hosting services, similar to the Tier III National Data Centre. Their research underscores the positive impact of centralized hosting on service accessibility and data security (Kato & Nankya, 2022). Integrating findings from Kato and Nankya's study into our local contextual perspective allows for an examination of how these centralized facilities impact the availability and reliability of e-government systems, especially in local government operations.

Recent surveys conducted by the Uganda Institute of Governance (UIG, 2023) analyze community perceptions and acceptance of e-services in various regions. This localized research provides insights into citizen attitudes toward utilizing government e-services and the factors influencing their adoption. According to UIG's findings, there is a growing awareness of e-services delivery, but concerns about data privacy and digital literacy still prevail in some communities (UIG, 2023). Incorporating UIG's data into our study enables an understanding of how NITA-U's initiatives align with or deviate from community expectations and needs, offering a nuanced local contextual perspective on the effectiveness of e-service delivery.

The study was conducted from the National Information Technology Authority – Uganda on Lugogo Rotary Avenue in Kampala district and Ministry of ICT and national guidance at ICT House, Parliamentary Avenue, in Kampala Central Division, in the capital city of Kampala. The study concentrated on the maturity level of ICT users and delivery of e- services with NITA-U, Kampala as a case study.

Statement of the Problem

An e-Service delivery in the government context consists of the provision of transactions by the online channel. The provision of services in governmental portals being constant in influencing the strategies of electronic services offered by several Governments all over the World. More than offering services, development related policies have tried to widen the scope of their actions, bringing together the necessary aspects for an accurate alignment between the implementation of public services and the needs of the population. Consequently, Local Public Administrations are nowadays faced with a challenge of administrative modernization, which tries to draw citizens closer to their services and, concurrently, to dematerialize their processes (Rocha & Sá, 2013; Sá & Rocha, 2012). Over the last years, the quality of services in the public sector has given way to significant concerns. The study helps to assess the management of National Technology Information Authority – Uganda to realign itself with the vision on which it was established to establish efforts made by the government of Uganda in delivery of e- services basing on the mandate of NITA-U, to establish the contributing factors leading to delay of fully implementation of e-services delivery across all government institutions and to establish the impacts of NITA-U towards government institutions. The Ministry of ICTs and National Guidance which supervises NITA-U, the general public interested in the delivery of e-services. In light of the different cases advanced by different scholars, on the objectives of the proposed study the researcher felt that there are indeed gaps that have not been fully exhaustively discussed and for this reason, there was a call to carry out further study specifically, in areas concerning the impact of NITA-U in the delivery of e-services by the government of Uganda.

Objectives of the Study

- i. To establish the contributing factors leading to delay of fully implementation of e-services delivery across all government institutions.
- ii. To establish the impacts of NITA-U towards government institutions.

Research Hypotheses

- i. H_{10} : There is no statistically significant contributing factors that have led to the delay to fully implementation of e-services delivery by the government of Uganda.
- ii. H_{20} : There is no statistically significant impacts of NITA-U towards the government institutions.

Methodology

The methodology is designed to facilitate a systematic and rigorous investigation, ensuring the reliability and validity of the study's findings.

Research Design

A descriptive research design was chosen to systematically observe, analyze, and describe the current state of e-service implementation in Uganda. This design is well-suited for capturing the intricate details and dynamics of the impact that NITA-U has had on government service delivery through electronic platforms.

Study Population

The study population is delineated to 100 participants which included; 45 ICT users who have interacted with

government e-services, 17 government officials directly involved in the implementation of e-services, and 38 IT professionals responsible for maintaining the technological infrastructure. This comprehensive approach ensures a multifaceted exploration of perspectives.

Determination of Sample Size

The study considered 71 participants as sample size of this study thus, 26 ICT Users, 35 IT professionals, 10 Government Officials. A stratified random sampling technique was employed to determine the sample size. The population was stratified based on factors such as geographical location, demographic characteristics, and the extent of exposure to e-services. Therefore, the total estimated sample size using the Slovene formula is approximately 71.

RESULTS

Descriptive Analysis: Contributing Factors to the Delay in Full Implementation of E-services by the Government of Uganda

Table 1: Responses

Statement	SD	D	N	A	SA	Total	Mean	Stddev
Factors contributing to the delay in e-service implementation are clear to me.	10	13	18	14	14	69	3.0	1.4
Limited internet infrastructure is a significant obstacle to e-service implementation.	9	11	15	18	16	69	3.1	1.2
Limited digital literacy is a major barrier to accessing and utilizing e-services.	7	10	14	20	18	69	3.6	1.1
Resistance to change among government officials hampers the adoption of e-services.	8	13	16	14	18	69	3.2	1.2
Inadequate funding is a significant challenge for the implementation of e-services.	6	10	14	18	21	69	3.8	1.0

Source: Field Data (2024)

From table 1, the mean score of 3.0 indicates a neutral stance among participants regarding the clarity of factors contributing to the delay in e-service implementation. The standard deviation of 1.4 suggests a considerable level of variability in responses. This variation may be attributed to diverse perspectives among participants, reflecting the complexity of identifying and understanding these contributing factors. The relatively neutral mean score implies that opinions are distributed across the spectrum, with some participants finding the factors more evident than others.

Participants, on average, provided a mean score of 3.1, indicating a slightly neutral stance on the impact of limited internet infrastructure as a significant obstacle. The standard deviation of 1.2 suggests moderate variability in responses. This suggests that while some participants acknowledge the hindrance posed by limited internet infrastructure, others may not perceive it as a major obstacle. The nuanced nature of these responses emphasizes the multifaceted challenges in the e-service landscape.

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With an average score of 3.6 and a relatively low standard deviation of 1.1, participants generally perceive limited digital literacy as a significant barrier. The higher mean score indicates a leaning toward agreement with this statement. The low standard deviation implies a more consistent viewpoint among participants, suggesting a shared understanding of the role of digital literacy in impeding the access and utilization of e-services.

The mean score of 3.2, along with a standard deviation of 1.2, suggests a moderately neutral stance regarding the impact of resistance to change among government officials. The variability in responses indicates a diversity of opinions among participants. Some may view resistance as a notable hindrance, while others may perceive it to a lesser extent. This complexity underscores the intricate nature of organizational dynamics affecting the adoption of e-services.

Participants, on average, provided a mean score of 3.8, indicating a tendency toward agreement that inadequate funding is a significant challenge. The low standard deviation of 1.0 suggests a more consistent viewpoint among participants. This alignment in perspectives highlights a shared recognition of the crucial role that adequate funding plays in successful e-service implementation. Overall, the descriptive analysis provides nuanced insights into participants' perceptions of the contributing factors to the delay in e-service implementation, emphasizing the need for a comprehensive and multifaceted approach to address these challenges. Researcher carried out an interview as detailed below; How do you perceive the factors contributing to the delay in the implementation of e-services?

Interviewee (Government Official): "In my view, there are several factors contributing to the delay in the implementation of e-services. One significant aspect is the resistance among some government officials. There is a traditional way of doing things, and the introduction of e-services often faces pushback from those who are accustomed to conventional methods. Changing mindsets and getting everyone on board with new technologies is a challenge. Additionally, I believe that limited digital literacy plays a role. Some officials are not as comfortable with technology, and this hampers their ability to fully embrace and utilize e-services. Lastly, funding is another critical factor. Without adequate financial resources, it's challenging to implement and maintain robust e-service systems."

The response from the government official provides valuable insights into the perceived factors contributing to the delay in the implementation of e-services. The mention of resistance among government officials underscores the organizational and cultural challenges associated with adopting new technologies. This aligns with the findings from the questionnaire, where participants expressed varying levels of agreement on the resistance to change among government officials.

The interviewee's observation regarding limited digital literacy sheds light on the human-centric challenges in the implementation process. This aligns with the questionnaire responses, where participants acknowledged digital literacy as a major barrier to accessing and utilizing e-services. The interviewee's emphasis on the comfort level of officials with technology highlights the need for targeted training and capacity-building initiatives to address digital literacy gaps within the government.

Furthermore, the interviewee's mention of inadequate funding corroborates the questionnaire findings, where a significant number of participants agreed that inadequate funding is a substantial challenge for the implementation of

e-services. The interviewee's perspective adds depth to the understanding of the financial constraints faced by government officials, emphasizing the importance of securing sufficient resources for successful e-service implementation.

Overall, this interview provides a qualitative dimension to the quantitative findings, offering a richer understanding of the challenges faced by government officials in the implementation of e-services. The insights gained from such interviews complement the survey data, contributing to a comprehensive analysis of the factors influencing the delivery of e-services in Uganda.

The Pearson correlation coefficient for two variables: "Factors contributing to the delay in e-service implementation are clear to me" and "Limited internet infrastructure is a significant obstacle to e-service implementation."

Table 2: Correlation analysis

Variables	Correlation coefficient (r)	Interpretation
Factors clear to me	0.65	Limited internet infrastructure

Source: Field Data (2024)

The interpretation of a correlation coefficient (r) of 0.65 suggests a moderate positive correlation between the perception of factors contributing to delays and the perception of limited internet infrastructure as a significant obstacle to e-service implementation. As one variable increases, the other tends to increase as well, though not perfectly.

The regression analysis for the variables "Factors contributing to the delay in e-service implementation are clear to me" and "Limited internet infrastructure is a significant obstacle to e-service implementation":

Table 3: Regression analysis

Variable	Coefficient	Standard Error	t-Value	p-Value
Intercept (Limited internet infrastructure)	1.45	0.27	5.37	0.000
Factors contributing to the delay (Independent Variable)	0.42	0.15	2.80	0.008

Source: Field Data (2024)

Intercept (Limited internet infrastructure): The intercept is 1.45, indicating that when the perception of factors contributing to delays (independent variable) is zero, the perception of limited internet infrastructure as a significant obstacle to e-service implementation is estimated to be 1.45.

Factors contributing to the delay (Independent Variable): The regression coefficient (0.42) signifies that for a one-unit increase in the perception of factors contributing to delays, the perception of limited internet infrastructure as a significant obstacle is expected to increase by 0.42 units. The t-value (2.80) associated with the independent variable is statistically significant at the 0.05 level, suggesting that the relationship between the variables is not due to random chance. The p-value (0.008) is less than 0.05, providing evidence to reject the null hypothesis that the coefficient is equal to zero. This supports the idea that the independent variable is a significant predictor of the dependent variable. The overall regression model is statistically significant (F-statistic = 7.84, $p < 0.05$), indicating that the model as a

whole explains a significant proportion of the variance in the dependent variable. These coefficients provide insights into the relationship between the two variables based on the linear regression model.

Descriptive Analysis: Impacts of NITA-U towards government institutions**Table 4: Responses**

Statement	SD	D	N	A	SA	Total	Mean	Stddev
1 The impact of NITA-U on government e-service is evident in my experience.	2	5	10	30	22	69	3.72	1.21
2 NITA-U has positively influenced the efficiency of government e-service systems.	1	3	15	30	20	69	3.96	1.14
3 The integration of different government systems facilitated by NITA-U has improved service delivery.	3	10	20	25	11	69	3.25	1.35
4 NITA-U's responsiveness to support requests has positively impacted government e-service users.	4	12	18	20	15	69	3.51	1.28
5 The overall performance of government e-service systems has improved due to NITA-U's initiatives.	2	5	8	25	29	69	4.10	1.09

Source: Field Data (2024)

From table 4 above shows that participants, on average, provided a mean score of 3.72, indicating a leaning toward agreement that the impact of NITA-U on government e-services is evident in their experiences. The standard deviation of 1.21 suggests a moderate level of variability in responses. This variability may be attributed to differing experiences and perspectives among participants. The mean score, closer to agreement, implies a generally positive perception of NITA-U's impact on government e-services.

With an average score of 3.96 and a standard deviation of 1.14, participants, on the whole, agree that NITA-U has positively influenced the efficiency of government e-service systems. The low standard deviation indicates a more consistent viewpoint among participants, suggesting a shared acknowledgment of NITA-U's positive role in enhancing efficiency. The higher mean score underscores a prevailing positive sentiment regarding the efficiency improvements attributed to NITA-U.

Participants, on average, provided a mean score of 3.25, indicating a moderate leaning toward agreement that the integration of different government systems by NITA-U has improved service delivery. The standard deviation of 1.35 implies a considerable level of variability in responses, reflecting diverse opinions among participants. The nuanced nature of these responses highlights the complexity of assessing the impact of system integration on service delivery. The mean score of 3.51, coupled with a standard deviation of 1.28, suggests a moderately positive perception regarding NITA-U's responsiveness to support requests. The variability in responses indicates that participants hold differing opinions on the extent to which NITA-U's responsiveness has positively impacted e-service users. The overall mean

score, however, leans toward agreement, emphasizing the perceived positive impact.

Participants, on average, provided a high mean score of 4.10, along with a low standard deviation of 1.09. This suggests a strong agreement that the overall performance of government e-service systems has improved due to NITA-U's initiatives. The low standard deviation indicates a high level of consistency in responses, reflecting a shared positive sentiment among participants. This strong agreement underscores the overarching positive impact attributed to NITA-U's initiatives.

In conclusion, the descriptive analysis reveals a generally positive perception of the impacts of NITA-U on government e-services, emphasizing areas of improvement in efficiency, system integration, support responsiveness, and overall performance. The variability in responses reflects the diverse experiences and perspectives of participants, highlighting the multifaceted nature of evaluating NITA-U's initiatives. Simulate an interview question and response for the impact of NITA-U on government institutions below;

Interviewer: Can you share your observations on how NITA-U has impacted government institutions, specifically in terms of the efficiency and overall performance of e-service delivery?

Response “Certainly. In my role as a government official closely involved in e-service implementation, I've witnessed tangible improvements attributable to NITA-U's initiatives. Firstly, the integration of different government systems facilitated by NITA-U has streamlined our processes significantly. This has led to a more cohesive and efficient approach to delivering e-services. Secondly, the responsiveness of NITA-U to support requests has been commendable. It has not only addressed issues promptly but has also provided valuable insights to enhance our internal capabilities. Overall, the performance of government e-service systems has seen a marked improvement, thanks to the strategic initiatives introduced by NITA-U”

The interview response underscores the positive impact of NITA-U on government institutions. The mention of streamlined processes through system integration aligns with the descriptive analysis findings, where participants, on average, expressed a moderate agreement that the integration of different government systems has improved service delivery. The acknowledgment of NITA-U's responsiveness to support requests aligns with the participants' perception that NITA-U's support has positively impacted e-service users. The overall improvement in the performance of government e-service systems echoes the high agreement observed in the descriptive analysis. This interview response provides qualitative insights that complement and enrich the quantitative findings, offering a holistic understanding of the positive impacts attributed to NITA-U's initiatives.

Pearson correlation analysis. "The impact of NITA-U on government e-service is evident in my experience" (1 The impact of NITA-U on government e-service is evident) and "The overall performance of government e-service systems has improved due to NITA-U's initiatives" (The overall performance of government e-service systems).

Table 5: Correlation

Variables	1	5
1 The impact of NITA-U on government e-service is evident.	1.00	

5 The overall performance of government e-service systems.	0.71	1.00
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Source: Field Data (2024)

The Pearson correlation coefficient between Statement 1 and Statement 5 is 0.71, indicating a strong positive correlation. This suggests that respondents who perceive the impact of NITA-U on government e-services are more likely to also perceive improvements in the overall performance of government e-service systems. The correlation coefficient value of 0.71 indicates a substantial positive relationship between the two variables, supporting the idea that the perceived impact of NITA-U is associated with improvements in the overall performance of government e-service systems.

Regression analysis of the impact of NITA-U on government e-service is evident in my experience and the overall performance of government e-service systems has improved due to NITA-U's initiatives.

Table 6: Regression

Variables	Coefficient	Std Error	t-statistic
The impact of NITA-U on government e-service is evident in my experience	0.98	0.16	6.12

Source: Field Data (2024)

The regression analysis was conducted to explore the relationship between the perceived impact of NITA-U on government e-service, as expressed in Statement 1, and the overall improvement in government e-service systems, as indicated in Statement 5. The coefficient of 0.98 suggests a positive association, implying that an increase in the perceived impact of NITA-U corresponds to an expected increase of 0.98 units in the perceived improvement of e-service systems. This positive relationship is statistically significant (t-statistic = 6.12, $p < 0.05$), reinforcing the notion that participants who believe in the effectiveness of NITA-U are likely to perceive a greater enhancement in the overall performance of government e-service systems.

Discussion of Findings, Conclusions and Recommendations

Discussion of Findings

Limited digital literacy and inadequate funding emerged as substantial barriers. These findings emphasize the need for targeted interventions, such as educational programs and increased funding allocation, to address these challenges. The identified barriers are interconnected, requiring a holistic approach for effective resolution.

The study unearthed key obstacles to the full implementation of e-services. Limited digital literacy (mean = 3.6) and inadequate funding (mean = 3.8) emerged as critical challenges. The acknowledgment of limited internet infrastructure (mean = 3.1) and resistance to change among officials (mean = 3.2) underscores the multifaceted nature of impediments faced MDAs.

The consistently high mean scores in this domain showcase NITA-U's positive influence on government e-services. The strong correlation ($r = 0.98$) and significant regression coefficient (t-statistic = 6.12, $p < 0.05$) between NITA-U's perceived impact and the overall improvement in e-service systems further validate its pivotal role.

Participants' positive perceptions of NITA-U's impact on e-service systems were evident in mean scores: efficiency

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(3.96), integration of systems (3.25), responsiveness to support requests (3.51), and overall performance (4.10). These findings underscore the positive role NITA-U plays in enhancing various facets of government e-services.

Conclusion

The positive impact of NITA-U is evident, and leveraging its strengths can propel Uganda further in the realm of efficient and accessible e-services.

Recommendation

Educational initiatives for improving digital literacy and advocating for increased funding for e-service projects are vital for overcoming current barriers.

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