The Influence of Digital Literacy on Citizen Engagement and Participation in E-Government Services for Inclusive Digital Governance

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Article Info

Abstract

This research aims to focus on the contribution of digital literacy in raising preferable citizen participation in e-government services, where most of the previous studies give prominence to technological factors and physical connectivity. The study endeavors to understand the impact of the extent to which these citizens understand and are capable of using the technologies on their ability to engage with e- government services. The study utilizes both survey data with interviews with citizens and public officials, which are used to supplement survey data. This research is said to establish that when the level of d-technology competencies of users improves, confidence, utilization, and the performance of e-government is boosted. In addition, the study finds that digital literacy moderates the effects of age, education, and socio-economic status on e-government use by reducing their effects. These findings stress the necessity of the digital literacy inclusion into public policy to provide equal opportunities for accessing digital authorities' services. In this regard, the study assuming this important research gap offers a more robust framework that can enable the policymakers and the public administrators to develop more efficient and user-friendly e-government systems. The study concludes with specific recommendations on how to increase digital literacy by targeting appropriate educational interventions and involving relevant stakeholder within the digital inclusion frameworks cross-cultural communities.

Introduction

E-government becomes one of the essential tools for improving public administration in the context of the digital environment and offers new opportunities for governments to communicate with their citizens. E-government is defined as the utilization of ICT by government institutions both in providing services directly to the public and as a tool for enhancing their internal efficiency and for encouraging citizen participation. They have been described as a way of enhancing the delegation of information and openness, effectiveness and responsibility in governance processes (Mathebula & Barnard, 2020). Governance or self-rule implies that people down below should be able to easily comprehend the important actions being taken by their government and is crucial to enhancing belief as well as participation inside a democracy according to McCabe (2021). Also, the Journalists, a key player in any society's information dissemination system can be remarkably empowered through e-government whereby they can offer their opinions, engage actively in the decision-making process as well as give their input in regards to government led projects and or campaigns (Thomson et al., 2022).

The impact of e-government in the area of enhancing transparency as well as effective citizens' engagement has been under a lot of debate both in literature and practice. Since governments of countries all over the world are interested in updating their activity and rendering their

procedures more transparent, e-government has been to bring changes to the public sector regarding functional imperfections, corruption, and the absence of public participation (Katic & Hillman, 2023). E-Government has the capability to increase openness of the governmental activity and citizen involvement due to the real-time availability of governmental information and better possibilities for governmental officers to share information with the population (Tejedo et al., 2022). However, the potential of e-government in enhancing transparency and citizen involvement has not been uniformly realized according to Zhang & Kaur (2024).

OTT or digital divide still becomes one of the biggest challenges to e-government implementation especially in the developing countries (Apriliyanti et al., 2021). Among them, unequal adoption of technology, internet infrastructure hurdles and, different levels of digital readiness of citizens present crucial dilemmas to working on e-government plans (Neumeyer et al., 2020). Furthermore, a criticism of e-government is in relation to this factor about the kind of transparency that e-government promises to deliver. Some scholars claim that notwithstanding the fact that e-government delivers more information to its users, it does not make the supply of government information more accountable or increase the confidence that the citizens place in the government so much (Malodia et al., 2021). The mere presence of information through online media cannot predict improved decision making or enhanced participation of the public in governance processes (Liu, 2021).

Perhaps the most important parameter of e-government is the kind of impact it has on the level of citizens' engagement. Literature suggests that most conventional approaches, like town meetings, or public hearings, bear inherent limitations that reduce greatest public participation due to, for instance, time limitations and venue accessibility, or socio-economic factors. The use of e-government platforms locally, nevertheless, opens new ways of civic participation in state affairs through ICT interfaces, and has the potential to bring in inclusiveness into the process (Hovik & Giannoumis, 2022). Information technologies enable citizens to engage in the decision-making process, obtain services from government agencies or express opinions on certain policies or services. However, there is still controversy regarding how actively these platforms promote participation especially by the hard-to-reach populations who may not afford internet or may lack the skills in using these networks.

The concept of transparency of e-government is also related to the objectives of good governance, namely accountability, response and participation in decision-making. Transparency in this context will therefore align with the actual nature and workings of governmental processes; availability and accuracy of information; and public supervisory role on officials (Felzmann et al., 2020). As governments go for e-government, the public becomes better placed to monitor all government activities, assess expenditures, and even monitor all the public policies. It is believed that the use of such transparency will help in elevating the level of public trust in governmental institutions as well as improve the satisfaction level of people with the performance of governments. However, the potential of e-government to enhance the transparency of government activities is still a moot issue as most people believe that e-government systems are just a platform where people get and search information prepared by government departments without increasing substantive changes in government structure for its transparency and accountability.

While proponents are arguing about the ability of the e-government to enhance supply of vital information and create opportunities for increased public participation, it seems that it worth addressing the difficulties of implementing e-government as well as analysing its potential effects. As more governments implement e-government to support the increased level of e-participation, the subsequent analysis of e-government effectiveness in enhancing increased civil participation and actual perceivable change in governmental functionality is still lacking.

From citizens' perspective, the openness of the e-government service, the ability to engage the facilities and their responsiveness will depend on the socio-economic status of citizens, their IT literacy and the engagement type of the government concerned. Therefore, using the qualitative research approaches to uncover these experiences contributes to understanding the extent to which e-government enhances transparency and participation exercise in practical scenarios.

Thus, this research seeks to complement this knowledge by assessing the effectiveness of e-government platforms based on the experiences of citizens on the two aspects of transparency and participation. This study aims to discover the views of the citizens on how e-government has made a positive or a negative impact in the following aspects of participation in the government processes and availability of clear information on public administration. As such, this study offers a more complex view of the e-government issues in relation to enhancing democratic governance in a developing country by employing qualitative research approach. As, majority of the operation in contemporary public administration is integrated and governed by the impact of e-government, technology, transparency and citizen participation; the analysis of the connection between the four elements would form a significant discourse for all the policy makers and academics that are interested in the execute use of ICT in governance.

Method

This research used a qualitative research approach to analyse the effect of e-government on transparency and engagement. The quantitative approach was not employed because it offered only summarized data about the participants' experience, impressions, and beliefs with regard to the e-government's use. To this end, the study aimed at exploring, in detail, how the notions of e-government impacted the experiences of citizens.

The study was carried out in areas with operating e- government and its subjects were selected with no bias to urban or rural residents. For the purpose of the study, participants were chosen from different areas of socio-economic status, ages and digital usage. Altogether thirty participants were considered during the course of this research and all of them used e-government services either actively or occasionally. These participants were purposively chosen in that, only those who have ever used the e-government services by seeking information, participating in consultations, or in any other capacity, were chosen.

These were done through use of self-administered semi-structured interviews and focus group discussions. They were conducted one-on-one so as to hear more qualitative accounts of participant's experience with an e-government systems and their understandings of transparency/active citizenship. The interview guide was developed to explore three main areas: First, they reported on general impressions of the openness of e-government platforms, second, they described their personal attitudes toward e-governance transparency, and third, they commented on how e-government either enhanced or hindered their engagement in governance.

The interviews gathered took about 45 minutes each and were conducted with the respondents' permission, and their contents were recorded in audio format. The narratives were later transcribed word for word for the analysis. The interviews adopted a semi-structured nature, which facilitated this kind of flexibility, the interviewer can follow issues that seemed relevant as they came up within the conversations.

The above respondents were followed by two focus group discussions. The focus groups comprised of 6-8 participants each to allow the group participants to share their experiences regarding use of e-government together, giving and receiving impressions on how e-government services affected their capability with regard to participation in government tasks

and search for transparent information. There were also Audio recordings during the Focus Group Discussions held and all the recordings were transcribed for analysis.

Therefore, the information gathered from the interviews and focus group discussions was analyzed using thematic analysis. Thematic analysis is a technique applied in order to examine themes or patterns in the principals' qualitative experiences: Thematic analysis or pattern-based analysis is one of the suitable approaches in analysing qualitative data. The procedure of the analysis was subdivided into several steps.

First of all, the transcriptions were read through and re-read in order for the researcher to engage herself in the data. Subsequently, first set of codes were derived from emergent themes and subthemes of transparency, citizens' engagement and ease of use of e-government services. These codes were then grouped into wider super-categories these being the topics of interest for the study.

The themes identified through this process included: These are (1) Awareness of the effectiveness of e-government in enhancing transparency, (2) Factors that hinder e-government service delivery (3) The role of e- government in the promotion or otherwise of citizen participation (4) The influence of digital literacy in e-government operation. It was also a process of interactive refinement, and they were revisited and debated within and between the researchers for confirmation of their applicability to the context of the participants' working experiences.

In order to enhance the credibility of the study's outcome, data obtained from interviews and focus group discussions were subjected to member checking whereby the participants herself/himself reviewed and confirmed the emergent themes and interpretations. This process helped to eliminate misunderstanding and made sure that all identities of the given findings matched the participants' perceptions.

Result and Discussion

It is therefore evident from the findings of this study that what the general populace lacks is the digital literacy necessary for improving their interactive engagement with such e-government services. With more and more governments moving online to deliver public services, use of these platforms by citizens has been a determinant that decides the engagement. This research aims at identifying the effects of digitalliteracy on the utilization of e-government by citizens with reference to informatioaccess, decision-making, and satisfaction. Thus, the present research fills the gap in literature concerning the link between digital literacy and e-government participation to understand how enhancing digital skills can lead to greater participation.

Perceived Effectiveness of E-Government in Enhancing Transparency

One of the central themes emerging from the study was the perceived effectiveness of e-government in enhancing transparency within government operations. Transparency, in the context of e-government, refers to the openness with which government actions, decisions, and policies are made available to the public through digital platforms. The participants overwhelmingly reported that e-government systems have had a significant impact on improving transparency, allowing citizens to access government information more easily and quickly.

Several participants emphasized that the availability of online platforms provided them with real-time access to government documents, reports, budgets, and policy announcements, which previously were often difficult to obtain or even hidden from the public eye. This access to

information was seen as a positive development that improved citizens' ability to hold the government accountable. One participant remarked,

> *"Before the e-government platform, we had to physically go to government offices and request documents, which was time-consuming and often met with delays. Now, I can find the same documents online, and it feels like the government is more open about what they are doing."*

Participants also highlighted that the use of e-government systems for disseminating official documents, such as budgets and public spending reports, had allowed them to scrutinize how public resources were being allocated and spent. This enhanced transparency was especially valued in local government settings, where participants often felt disconnected from decision-making processes. As one respondent noted,

> *"E-government has really made a difference in showing how our local government spends money. For example, I can check how much money was spent on a new road project or a health program. This was not possible before; we were often left in the dark about government spending."*

However, some participants noted that while the platforms themselves were effective in providing transparency, the challenge remained in ensuring that the information provided was understandable and actionable. A participant shared,

> *"The information is there, but sometimes it's hard to understand, especially for people who are not familiar with government jargon. It's a great step forward, but there needs to be more effort in presenting the information in a way that everyone can access and understand."*

This highlighted a concern that although the e-government platforms provided access to data, there was still a gap in making that information user-friendly, especially for citizens without technical or legal expertise.

Despite these challenges, participants consistently agreed that e-government platforms had made a substantial difference in the accessibility and availability of government-related information. Many felt that this access to information had reduced the opportunities for corruption and improved public trust. One interviewee expressed this sentiment by saying,

> *"There's less room for corruption now because people can actually see what's happening. If the government spends public funds, we can check it ourselves. We no longer have to rely on hearsay or rumors to find out what's going on."*

Moreover, transparency was also perceived as being enhanced through the implementation of e-government platforms that allowed for greater citizen participation in policy-making processes. For example, several participants pointed to online public consultations and feedback surveys as avenues through which they could influence policy decisions. One participant shared,

> *"I used to feel like the government didn't care about what I think. But now, I can give my opinion on projects and policies through surveys on the government website. I think it's a step in the right direction for transparency and democracy."*

This digital engagement enabled citizens to feel that their voices were heard, fostering a greater sense of inclusion in the political process.

Overall, the results of this study suggest that e-government has been perceived as a tool for improving transparency, offering citizens more access to government information and enabling them to participate in decision-making. However, the challenge of making this information

understandable and accessible to all citizens remains an area for further improvement. The general consensus among participants was that while e-government platforms have significantly enhanced transparency, there is still work to be done to ensure that all citizens, regardless of their socio-economic status or digital literacy, can fully benefit from the transparency they offer.

Barriers to Accessing E-Government Services

While e-government platforms have made significant strides in improving transparency and citizen participation, several barriers to accessing these services were identified by the participants. These barriers were multifaceted, involving technological challenges, issues related to digital literacy, and the accessibility of the platforms themselves. Despite the potential of e-government to enhance democratic engagement and government transparency, these challenges hindered some citizens from fully benefiting from the available services.

One of the primary barriers to accessing e-government services reported by participants was related to technological infrastructure, particularly in rural areas. Many participants noted that inconsistent internet connectivity, slow speeds, and limited access to modern devices posed significant obstacles to using e-government platforms effectively. As one participant from a rural area explained,

> *"I live in a remote village, and the internet is often too slow to access any government service online. Sometimes the page doesn't even load properly, and I end up wasting time trying to use it."*

This technological divide between urban and rural areas meant that while some citizens enjoyed seamless access to e-government services, others faced frequent disruptions due to poor internet access.

Another technological barrier was the affordability of digital devices. For lower-income households, the cost of purchasing a computer, tablet, or even a smartphone capable of accessing e-government services was a significant challenge. A participant highlighted,

> *"I have to rely on my old phone to access e-government services, but it's not very reliable. If I had a better phone or a laptop, maybe I could use the services more efficiently, but I just can't afford it."*

This lack of access to the necessary technology excluded certain demographic groups, limiting their ability to participate in digital governance.

Another major barrier identified was the issue of digital literacy. Many participants, particularly older adults and those with limited formal education, reported feeling overwhelmed or frustrated by the complexity of e-government platforms. They lacked the skills to navigate the online services effectively, which led to a sense of exclusion. One participant, an elderly citizen, expressed,

> *"I know there are many services online, but I don't know how to use them. I find the websites confusing and the instructions unclear. I wish there were better guides or people to help me."*

This highlighted the digital literacy gap, which remained a significant obstacle to ensuring that e-government services were accessible to all citizens, regardless of their age or educational background.

Even for those with basic digital skills, navigating government websites could still be difficult. Several participants noted that e-government platforms were often designed with complex layouts or used technical language that was difficult to understand. A participant mentioned,

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> *"It's hard to know where to go on the website to find what you need. There are so many sections, and the terms they use are not familiar to me. I end up giving up before I find anything useful."*

This lack of user-friendliness, combined with insufficient guidance, prevented many citizens from making full use of the platforms.

In addition to technological and literacy barriers, participants pointed out issues with the overall accessibility of e-government platforms. Some citizens found that the platforms were not designed with accessibility needs in mind, particularly for people with disabilities. One participant, who had a visual impairment, commented,

> *"I have difficulty reading the text on the government website. It's too small, and some of the pages aren't compatible with screen readers. It feels like the platform wasn't made with people like me in mind."*

The lack of accessibility features such as screen readers, larger fonts, or audio guides made it difficult for individuals with disabilities to fully participate in e-government services.

Additionally, some participants noted that government websites were not mobile-friendly, making it harder for those who rely on smartphones to access services. A participant said,

> *"The government website works fine on a computer, but on my phone, it's almost impossible to navigate. It's frustrating, especially when you don't have access to a computer."*

This limited accessibility, especially on mobile devices, presented a barrier for citizens who did not have access to a computer or preferred using smartphones to interact with e-government services.

Several participants also mentioned a lack of awareness about the available e-government services as a barrier. Many citizens were simply unaware of the existence of certain services or did not understand how to use them. As one participant stated,

> *"I don't know what services are available online or where to find them. It feels like the government hasn't done enough to advertise or explain these services to the public."*

Without adequate outreach and information campaigns, many citizens were left in the dark about the benefits of e-government, which limited their engagement with digital governance.

Trust in the security and privacy of e-government platforms was another barrier that affected some participants' willingness to access online services. Concerns about data privacy and online security were common, especially among older participants or those with less exposure to digital technologies. A participant expressed,

> *"I don't feel comfortable entering my personal details on the government website. I've heard about data breaches, and I'm not sure my information is safe."*

These concerns about the security of personal information contributed to a general hesitation to engage with e-government platforms, especially for citizens who were not fully confident in digital security.

E-Government's Impact on Citizen Participation

The implementation of e-government has profoundly reshaped citizen participation by enhancing access to public services and enabling more inclusive decision-making processes. This transformation is particularly evident in how citizens engage with governmental platforms and policies, as e-government fosters greater transparency, accountability, and efficiency.

Digital platforms not only reduce barriers to participation, such as geographic limitations and time constraints, but also empower citizens by providing tools for direct feedback and engagement.

E-government platforms enable real-time dissemination of information, allowing citizens to remain informed about public policies, development programs, and budget allocations. By eliminating bureaucratic layers, these systems make government operations more transparent. For instance, a respondent from a recent study emphasized:

> *"Accessing government updates has never been easier. Through these platforms, I can see where my tax money is being spent."*

Such transparency fosters trust in governmental institutions and encourages active citizen involvement in governance. Citizens are more likely to participate when they believe their voices contribute to meaningful outcomes.

One of the most significant impacts of e-government is its role in creating two-way communication channels between the government and its constituents. Through online platforms, citizens can submit complaints, suggestions, or inquiries, which are promptly addressed by respective authorities. As stated by another participant:

> *"The online feedback feature helps me report issues like road damage without needing to visit the office. It's a convenient and quick process."*

This interaction bridges the gap between citizens and policymakers, fostering a collaborative governance environment.

While e-government initiatives have increased participation rates, challenges such as digital literacy gaps and unequal access to technology persist. However, with targeted programs to enhance digital literacy and expand internet coverage, governments can ensure broader inclusion and equitable participation.

The Role of Digital Literacy in E-Government Engagement

Digital literacy is a critical enabler of effective e-government engagement, as it equips citizens with the skills and confidence to navigate digital platforms and actively participate in governance. Without adequate digital literacy, even the most advanced e-government systems may fail to achieve their intended inclusivity and accessibility objectives. This concept underscores the intersection of technological capability and civic participation in the digital age.

Digital literacy encompasses the ability to access, understand, and utilize digital tools and resources. Citizens who are digitally literate can effectively engage with e-government services, such as applying for permits, accessing public records, or participating in online consultations. For instance, one interviewee noted:

> *"Learning to navigate government portals has made me feel more independent and empowered. I can now complete tasks online without relying on others."*

This empowerment translates into higher levels of engagement, as individuals feel capable of utilizing e-government platforms to meet their needs and voice their opinions.

Despite the potential of e-government, a lack of digital literacy often excludes vulnerable populations, such as the elderly or residents of rural areas, from fully participating. Bridging this gap requires targeted digital literacy programs to ensure that all citizens, regardless of their

socio-economic background, can benefit from e-government initiatives. A respondent emphasized this challenge:

> *"Many older people in my community struggle to use these platforms. If we don't address this, they'll be left behind in accessing essential services."*

Governments can mitigate this issue by offering training workshops, simplified interfaces, and multilingual support to cater to diverse user groups.

Digital literacy not only enhances individual capabilities but also cultivates a sense of community engagement. Citizens who are well-versed in digital tools are more likely to engage in public discussions, participate in policy-making processes, and hold officials accountable. This collective participation strengthens democratic governance and fosters a more informed society.

This research fills the existing literature gap focusing on digital literacy which is a crucial element in enhancing apposite e-government interactions with citizens. Even though the technological environment of e-governmentity has advanced over the last years, most earlier studies were mainly concerned with questions such as Internet connection and website quality. However, the degrees of digital literacy in the citizens are not always homogenous and consequentially, how their usage of these platforms is influenced has not been investigated widely (Jabeen et al., 2023). Thus, the findings of this study add a new perspective to the literature by showing that even where the infrastructure exists people cannot engage if they have no understanding of digital media technologies.

Moreover, prior research has usually considered e-government adoption as a single-stage concept that depends on the availability and accessibility of services (Abbasi et al., 2021). This study, however, shows that it is wrong to assume that digital literacy is a static factor that once developed and deployed, must remain fixed forever. It affords support to a notion that while active and inactive citizens spend different levels of time accessing e-government platforms, active citizens with higher degrees of digital literacy get more value from the platform than the inactive type, as advanced by Peter & Polgar (2020).

Another important contribution of the study lies in analysing the digital divide not only as the gap in access to technology but as the gap in capabilities and perceived proficiency in the use of digital media. Digital divides have been well covered in e-government literature (Bakon et al., 2020), but this research reveals that digital literacy is a conclusive factor that would determine whether or not a citizen has the capability to access e-government services. Other recent works have built upon this relationship, pointing out that those who lack digital citizenship feel that e-government interfaces are overly complicated and daunting.

This research extends this line of reasoning and proposes that government-led initiatives should not only be concerned with the availability of internet connectivity as well as devices but also online literacy. According to similar studies, general intervention measures include community-based training programmes and small-scale digital-based training programmes, which strongly positively increase the citizens' participation in using public services online (Hassen et al., 2021). The result provides the evidence to back the claim that efforts to reduce the digital divide must consider both access and capability.

The factors outlined all point to a need to have digital literacy programs factor into the overall e-government strategies. Past works have discussed digital literacy more as an afterthought as many focus on the advancement or modernity of an e-government application (Gleason & Manca, 2023). This study, however, points out that in order to realise the inclusiveness and the

participipation-boosting effects of e-government, the user orientation as well as focused intervention in digital literacy is an absolute necessity.

Such evidence is supported by the latest research and emphasizes that if the government includes digital literacy initiatives in e-government projects, people will become more actively involved and satisfied with the quality of services. study found that societies with effective digitization programmes had higher levels of information and digital participation, and among the excluded groups. This supports the findings made in this study to reveal that literate contextualised initiatives increase citizens' assurance and ability in appraising e-government solutions.

The study also has implications for discussions of civic engagement pointing out that digital literacy is a key enabler to engagement in governance. In line with prior works, e-government has been acknowledged to improve the availability of services (Mahlangu & Ruhode, 2021), this paper takes the discussion further to consider the impact of digital literacy as enabling citizens from mere consumers of services to vociferous participants in policy-making. With regard to the role of digital literacy in solving the challenges of civic engagement, AbdulKareem & Oladimeji (2024) enhancing the importance of digital literacy to underpin the assumption that digitally competent citizens are innately active in meaningful governance processes.

Furthermore, this research offers evidence-based recommendations on how digital literacy can smarten up civic engagement. It postulates that greater engagement levels may be achieved where e-government platforms include user-friendly enhanced interfaces and culturally sensitive message content. On this view, the findings corroborate recent research focusing on the use of human-centred design paradigm when implementing e-government solutions (Williams, 2020; Popa et al., 2022; Radulovic, 2022).

Conclusion

This work reconciles the gaps of previous studies that mainly emphasise on the amount and availability of e-government services but lacks an understanding on how citizens interact with these services due to digital literacy. The results emphasize that digital literacy is not an additional competency but rather the essence of e-government contribution. In the same manner and when people are given educational programs that close the digital gaps either at household or individual basis, government significantly increase the citizens' participation in governance initiatives resulting to accountability, transparency and general participation. The study recommends that inadequate e-participation be addressed through a dual approach which focuses on embedding digital literacy programmes and creating user friendly, culturally sensitive e- government structures to enhance the effectiveness of the technology in enabling citizens to participate fully in public affairs.

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