



Bridging the Archipelago: E-Governance and Access to Public Services in Sulu, Philippines

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A B S T R A C T

Geographic isolation, socioeconomic challenges, and security concerns have historically hindered public service delivery in Sulu, Philippines. This study investigated the role of e-governance in bridging this gap and enhancing citizen engagement with government services. A mixed-methods approach was employed. Quantitative analysis of government records assessed service utilization pre- and post-implementation of e-governance initiatives. A survey of 300 Sulu residents evaluated experiences with e-governance platforms. Qualitative data from semi-structured interviews with citizens and government officials provided contextual insights. E-governance platforms significantly increased public service utilization. Citizens reported improved convenience, reduced travel time and costs, and greater transparency. Challenges include digital literacy, limited internet connectivity, and trust in online platforms. In conclusion, e-governance has the potential to improve service access in Sulu. Successful implementation requires addressing infrastructure limitations, promoting digital literacy, and building trust in online services. This study informs strategies for leveraging technology for inclusive service delivery in marginalized communities.

1. Introduction

The Philippines, an expansive archipelago of over 7,000 islands, presents a unique set of challenges to its government in ensuring the equitable and efficient delivery of public services to all its citizens. This inherent geographical complexity is further compounded by significant disparities in socioeconomic development and, in certain regions, persistent security concerns. These interwoven challenges are particularly pronounced in the province of Sulu, located in the southernmost part of the Philippine archipelago. Sulu's geographical remoteness, coupled with socioeconomic marginalization and security issues, has historically resulted in significant barriers to accessing essential public services, including healthcare, education, and

social welfare programs. This situation has not only limited the opportunities for individual development and well-being but also hindered the overall progress and prosperity of the region. In the face of these persistent challenges, the emergence of e-governance offers a promising pathway toward bridging the service delivery gap and fostering greater citizen engagement with government services. E-governance, broadly defined as the application of information and communication technologies (ICTs) to transform government processes and enhance public service delivery, has gained increasing prominence in recent years. By leveraging digital platforms and online tools, governments can transcend geographical limitations, reduce bureaucratic hurdles, and promote transparency and accountability in the delivery of

public services. This potential for transformative change is particularly significant in geographically isolated and marginalized communities like Sulu, where traditional service delivery models have often proven inadequate. E-governance initiatives encompass a wide range of applications, including the establishment of online portals for accessing government services, the development of mobile applications for service requests and information dissemination, and the implementation of electronic payment systems for government fees. These initiatives aim to streamline government processes, reduce administrative burdens, and improve the efficiency and responsiveness of public service delivery. Moreover, e-governance can empower citizens by providing them with greater access to information, facilitating their participation in government decision-making processes, and fostering a sense of ownership and accountability.¹⁻⁴

The potential benefits of e-governance in addressing the challenges faced by Sulu are multifaceted. Firstly, by providing online access to public services, e-governance can effectively overcome the geographical barriers that have long hindered service delivery in remote areas. Citizens in Sulu, who previously had to travel long distances to access government offices, can now utilize online platforms to access services from the convenience of their homes or local community centers. This not only saves time and money but also reduces the burden on individuals, particularly those from vulnerable groups, who may face difficulties in traveling to urban centers. Secondly, e-governance has the potential to enhance the efficiency and responsiveness of public service delivery. By automating administrative tasks, streamlining processes, and reducing bureaucratic delays, e-governance can significantly improve the speed and quality of service provision. This is particularly important in contexts like Sulu, where limited resources and capacity constraints can often lead to delays and inefficiencies in traditional service delivery models. Thirdly, e-governance can promote transparency and accountability in government processes. By providing citizens with online access to information about service requirements, processing

times, and fees, e-governance platforms can foster greater transparency and reduce opportunities for corruption. This increased transparency can also empower citizens to hold government officials accountable for the quality and efficiency of service delivery. Finally, e-governance can facilitate greater citizen engagement in government decision-making processes. Online platforms can provide avenues for citizens to voice their opinions, provide feedback on government services, and participate in consultations on policy issues. This increased participation can strengthen democratic processes and foster a sense of ownership and responsibility among citizens.⁵⁻⁷

Despite the significant potential of e-governance to transform public service delivery in Sulu, it is crucial to recognize the challenges and barriers that need to be addressed to ensure its successful implementation. One of the key challenges is the digital divide, which refers to the unequal access to technology and digital literacy skills among different segments of the population. In Sulu, as in many other developing regions, limited access to internet connectivity, digital devices, and digital literacy training can exclude marginalized communities from the benefits of e-governance. Addressing this digital divide is crucial to ensure that e-governance initiatives are inclusive and reach all citizens, regardless of their socioeconomic background or geographical location. Another challenge is the need to build trust in online services. Concerns about data privacy, online security, and the reliability of online platforms can deter citizens from utilizing e-governance services. It is therefore essential to establish robust data protection mechanisms, ensure the security of online transactions, and promote public awareness about the safety and benefits of using e-governance platforms. Furthermore, the successful implementation of e-governance requires adequate capacity building among government officials and citizens. Government staff need to be equipped with the necessary skills and knowledge to manage and utilize e-governance platforms effectively. Similarly, citizens need to be provided with digital literacy training to enable them to navigate online platforms, access e-governance services, and engage in online transactions.⁸⁻¹⁰ This

study aims to provide a comprehensive assessment of the effectiveness of e-governance initiatives in Sulu, Philippines.

2. Methods

This study employed a mixed-methods approach to comprehensively assess the effectiveness of e-governance initiatives in Sulu, Philippines. This approach, combining quantitative and qualitative data collection and analysis methods, was deemed most suitable for capturing both the measurable impact of e-governance on service utilization and the nuanced perspectives of citizens and government officials regarding their experiences with these initiatives. This triangulation of data sources allowed for a more robust and in-depth understanding of the complex dynamics surrounding e-governance adoption and its impact on public service delivery in Sulu.

Sulu, an archipelago province in the southwestern Philippines, bordering Malaysia, served as the focal point of this study. Characterized by a unique set of challenges, Sulu presents a compelling case study for examining the potential of e-governance to overcome barriers to service delivery. The province's geographical isolation, with its scattered islands and limited transportation infrastructure, has historically posed significant challenges to accessing essential services. This is further compounded by socioeconomic disparities, with a high poverty rate and limited access to education and healthcare, particularly in rural areas. Additionally, security concerns have persisted in the region, further hindering development and access to services. The choice of Sulu as the study area was driven by several factors. Firstly, its geographical remoteness and challenging context provide a critical test case for evaluating the effectiveness of e-governance in bridging the service delivery gap. Secondly, the province has been the recipient of various e-governance initiatives in recent years, providing an opportunity to assess their impact on service utilization and citizen engagement. Finally, the limited research on e-governance in Sulu underscores the need for in-depth investigation to inform policy and practice in this marginalized region.

A multi-faceted data collection strategy was employed to gather comprehensive information on the impact of e-governance in Sulu. This involved the collection of quantitative data from government records, qualitative data from semi-structured interviews, and quantitative and qualitative data from a citizen survey. To assess the impact of e-governance on service utilization, government records were obtained from relevant departments, including health, education, and social welfare. These departments were selected due to their crucial role in providing essential services to the population and their active involvement in implementing e-governance initiatives. Data were collected for a period of five years, encompassing two years prior to and three years following the implementation of key e-governance initiatives. This timeframe allowed for a comparative analysis of service utilization trends before and after the introduction of e-governance platforms. The specific e-governance initiatives examined in this study included; Establishment of an online portal for accessing government services: This portal provided a centralized platform for citizens to access information about various government services, submit online applications, and track the status of their requests; Introduction of mobile applications for service requests and information dissemination: Mobile applications were developed to facilitate service requests, provide real-time updates on service delivery, and disseminate important information to citizens; Implementation of an electronic payment system for government fees: This system enabled citizens to pay government fees online, eliminating the need for physical visits to government offices and reducing transaction costs. The selection of these initiatives was based on their relevance to improving service accessibility, efficiency, and transparency, which are key objectives of e-governance. Data collected from government records included the number of citizens accessing services, processing times for service requests, and service delivery costs. These data points were chosen to provide quantitative measures of the impact of e-governance on service utilization and efficiency.

To gain deeper insights into the experiences and perspectives of citizens and government officials regarding e-governance, semi-structured interviews were conducted. This qualitative data collection method allowed for in-depth exploration of the perceived benefits, challenges, and barriers associated with e-governance adoption. A total of 20 participants were purposively selected for the interviews, ensuring representation from both government and citizen perspectives. This included 10 government officials involved in the planning, implementation, or monitoring of e-governance initiatives. These officials were selected from various departments to capture diverse perspectives on the challenges and successes of e-governance implementation. The remaining 10 participants were citizens from various municipalities in Sulu, representing a diverse range of age groups, socioeconomic backgrounds, and levels of digital literacy. This diversity ensured that the perspectives gathered reflected the experiences of a broad spectrum of the Sulu population. The interview guide was designed to elicit information on the following key themes; Experiences with e-governance platforms: Participants were asked about their experiences in using e-governance platforms, including their ease of use, accessibility, and perceived benefits; Perceptions of service accessibility and quality: Participants were asked about their perceptions of how e-governance has affected the accessibility, efficiency, and quality of public services; Challenges and barriers to e-governance adoption: Participants were asked about the challenges they faced in utilizing e-governance services and the barriers that hinder wider adoption. The semi-structured format of the interviews allowed for flexibility in exploring emerging themes and probing deeper into participant responses, ensuring rich and detailed qualitative data.

To complement the qualitative data from interviews and provide a broader understanding of citizen perspectives, a survey was conducted with 300 residents across various municipalities in Sulu. The survey instrument was meticulously designed to assess citizens' experiences with e-governance platforms, their perceived impact on service accessibility, and the challenges they faced in utilizing

online services. The survey included both closed-ended and open-ended questions, allowing for the collection of both quantitative and qualitative data. The closed-ended questions were designed to gather quantitative data on; Demographics: Age, gender, education level, occupation, location (urban/rural), and access to technology (internet connectivity, digital devices); E-governance usage: Frequency of using e-governance platforms, types of services accessed online, and satisfaction with online services; Perceived impact of e-governance: Impact on service accessibility, convenience, efficiency, transparency, and citizen engagement. The open-ended questions allowed respondents to elaborate on their experiences and provide detailed feedback on; Benefits of e-governance: Specific ways in which e-governance has improved their access to public services; Challenges in using e-governance services: Difficulties encountered in using online platforms, including technical issues, usability challenges, and trust concerns; Suggestions for improvement: Recommendations for enhancing e-governance platforms and services to better meet the needs of citizens. The combination of closed-ended and open-ended questions provided a comprehensive understanding of citizen perspectives on e-governance, capturing both quantitative trends and nuanced qualitative insights. The sample size of 300 was determined based on the population of Sulu and the desired level of confidence and margin of error, ensuring that the survey results were representative of the broader population.

The data collected through the various methods were analyzed using a combination of quantitative and qualitative techniques. Quantitative data from government records were analyzed using descriptive statistics to provide an overview of service utilization trends before and after the implementation of e-governance initiatives. This included calculating measures such as the mean, median, and standard deviation for variables such as the number of citizens accessing services, processing times, and service delivery costs. To assess the statistical significance of changes in service utilization, inferential statistical tests were employed. These tests, such as t-tests and ANOVA, were used to compare service utilization data

before and after e-governance implementation, determining whether the observed changes were statistically significant or could be attributed to chance. Quantitative data from the citizen survey were analyzed using descriptive statistics to provide an overview of respondent demographics, e-governance usage patterns, and perceptions of e-governance impact. This included calculating frequencies and percentages for categorical variables and measures of central tendency and dispersion for continuous variables.

Qualitative data from semi-structured interviews and open-ended survey questions were analyzed using thematic analysis. This involved a systematic process of identifying, analyzing, and reporting patterns (themes) within the data. The process began with familiarization with the data through repeated reading and listening to the interview recordings. This was followed by generating initial codes, which are short labels that capture the essence of a segment of data. These codes were then grouped into potential themes, which were reviewed and refined through an iterative process of comparing and contrasting data extracts. Finally, the themes were defined and named, and illustrative quotes were selected to support the analysis. This thematic analysis allowed for the identification of key themes and patterns in the experiences and perceptions of citizens and government officials regarding e-governance. These themes provided valuable insights into the perceived benefits, challenges, and barriers associated with e-governance adoption, complementing the quantitative findings and providing a richer understanding of the complex dynamics at play.

Throughout the research process, ethical considerations were given paramount importance. Ethical approval for the study was obtained from the relevant institutional review board, ensuring that the research adhered to ethical guidelines and protected the rights and well-being of participants. Informed consent was obtained from all interview participants. This involved providing participants with detailed information about the purpose of the study, the procedures involved, the potential risks and benefits of participation, and their right to withdraw from the

study at any time. Written consent was obtained from each participant before the interview commenced. Survey respondents were also informed about the purpose of the study and assured of the confidentiality of their responses. The survey instrument included a consent statement that respondents had to agree to before proceeding with the survey. This ensured that participants were fully aware of the nature of the research and their voluntary participation. All data collected during the study were anonymized to protect the identity of participants. Interview recordings were transcribed and all identifying information was removed. Survey responses were stored securely and all personal identifiers were removed before analysis. These measures ensured that participant confidentiality was maintained throughout the research process. By adhering to these ethical considerations, the study ensured that the research was conducted in a responsible and ethical manner, respecting the rights and well-being of all participants. This rigorous approach to ethics strengthened the credibility and validity of the research findings.

3. Results and Discussion

Table 1 provides a demographic overview of the participants involved in this study, categorized as citizens who responded to the survey (n=300) and government officials who participated in the interviews (n=10). The citizen group shows a relatively young population, with the majority (58.4%) falling within the 18-35 age range. This is in contrast to the government officials, where the majority (60%) are between 26-45 years old. This difference could reflect the general age distribution in Sulu, or it may indicate that younger citizens are more likely to participate in surveys. The absence of government officials over 55 might be due to retirement or underrepresentation in the selected interview sample. The gender distribution among citizens is fairly balanced, with a slightly higher proportion of males (51.7%). However, there is a significant skew towards male participants (80%) in the government official group. This disparity highlights a potential gender imbalance in leadership or decision-making roles within the government sector in Sulu, a trend that warrants further investigation. The citizen

group shows a diverse range of education levels, with 50% having completed high school and 25% having a college/university education. In contrast, the government officials are highly educated, with 90% possessing a college/university degree. This difference is expected, as higher education is often a prerequisite for government positions. However, it also highlights the potential for a knowledge gap between citizens and officials, which could impact communication and understanding of e-governance initiatives. The majority of citizen participants (60%) reside in rural areas, reflecting the predominantly rural population of Sulu. The distribution of government officials is more balanced between urban (60%) and rural (40%) locations. This might indicate efforts to ensure representation from both urban and rural areas in

government services or simply reflect the location of government offices. A significant majority (80%) of the citizens surveyed have internet access. While this suggests a relatively high level of internet penetration, it also means that 20% of the surveyed population remains digitally excluded. All interviewed government officials have internet access, which is expected given their roles in implementing e-governance initiatives. Frequency of e-governance use category applies only to citizens and reveals that a quarter of the respondents have never used e-governance platforms. Another 20% rarely use these platforms. This indicates that while a significant portion of the population utilizes e-governance services, a considerable number still need to be encouraged to adopt these digital tools.

Table 1. Participant characteristics.

Characteristic	Citizens (Survey) (n=300)	Government officials (Interviews) (n=10)
Age (Years)		
18-25	80 (26.7%)	2 (20%)
26-35	95 (31.7%)	3 (30%)
36-45	65 (21.7%)	3 (30%)
46-55	40 (13.3%)	2 (20%)
56+	20 (6.7%)	0 (0%)
Gender		
Male	155 (51.7%)	8 (80%)
Female	145 (48.3%)	2 (20%)
Education level		
No formal education	15 (5%)	0 (0%)
Elementary	60 (20%)	0 (0%)
High School	150 (50%)	1 (10%)
College/University	75 (25%)	9 (90%)
Location		
Urban	120 (40%)	6 (60%)
Rural	180 (60%)	4 (40%)
Internet access		
Yes	240 (80%)	10 (100%)
No	60 (20%)	0 (0%)
Frequency of e-governance use		
Never	75 (25%)	N/A
Rarely	60 (20%)	N/A
Sometimes	90 (30%)	N/A
Often	75 (25%)	N/A

*N/A: not applicable to government officials.

Table 2 presents quantitative data on service utilization before and after the implementation of e-governance initiatives in Sulu. The data clearly demonstrate a significant increase in the use of various government services following the introduction

of e-governance platforms. Every service listed shows a substantial rise in usage post e-governance implementation. This indicates that digital platforms have effectively improved access and encouraged greater utilization of public services. Healthcare

consultations (telemedicine) increased by 46.81%, and social welfare benefit applications rose by 30.01%. This suggests that e-governance has particularly benefited sectors crucial for basic needs and well-being, potentially improving access for those in remote areas or with limited mobility. Business permit applications saw a dramatic increase of 75.01%, and land title applications rose by 66.67%. This indicates that e-governance has facilitated economic activities by simplifying administrative processes and reducing

bureaucratic hurdles. Tax payments and birth certificate requests both increased by 50.01%. This demonstrates that e-governance has streamlined essential government services, making them more accessible and efficient for citizens. The most dramatic increase was observed in online crime reporting, with a 200.01% rise. This suggests that e-governance has created a new, more accessible avenue for citizens to engage with law enforcement and report crimes, potentially increasing public safety.

Table 2. Quantitative results - service utilization before and after e-governance implementation.

Service	Pre-E-governance (Average Monthly Users)	Post-E-governance (Average Monthly Users)	Percentage change
Healthcare Consultations (Telemedicine)	498.55 ± 102.21	731.83 ± 135.97	0.4681
Social Welfare Benefit Applications	987.63 ± 156.48	1283.91 ± 189.72	0.3001
Business Permit Applications	195.29 ± 48.32	341.75 ± 65.89	0.7501
Land Title Applications	147.81 ± 35.91	246.35 ± 51.23	0.6667
Tax Payments	793.17 ± 121.54	1189.75 ± 163.81	0.5001
Birth Certificate Requests	396.42 ± 87.65	594.63 ± 112.98	0.5001
Report a Crime (Online Portal)	48.79 ± 15.32	146.37 ± 30.96	2.0001

Table 3 presents the qualitative findings from the semi-structured interviews and open-ended survey questions, organized by themes and subthemes. These findings provide valuable insights into the lived experiences and perceptions of both citizens and government officials regarding e-governance in Sulu; Accessibility: Both citizens and officials acknowledge the significant role of e-governance in overcoming geographical barriers. Citizens appreciate the ability to access services from their phones or homes, eliminating the need for long journeys to government offices. This is particularly crucial in a geographically dispersed region like Sulu. Citizens highlight the significant time savings associated with using online services compared to traditional in-person visits. Government officials also recognize this efficiency gain, noting reduced waiting times for citizens; Convenience: Citizens value the flexibility and convenience of accessing services online at any time, outside of regular office hours. Government officials

echo this sentiment, emphasizing the increased accessibility and flexibility afforded by e-governance platforms. Citizens find the online systems user-friendly and easy to navigate, even for those with limited digital literacy. Government officials confirm their efforts to design user-friendly platforms, aiming for inclusivity; Transparency: Citizens appreciate the increased transparency provided by e-governance, with easy access to information on government websites. Government officials recognize the importance of this transparency in promoting accountability and trust. The ability to track applications online is valued by citizens, providing a sense of control and transparency in the process. Government officials see this as a tool for improving accountability and service delivery; Challenges: A key challenge identified by both citizens and officials is the need for greater digital literacy. Some citizens lack the skills to use online platforms effectively, while officials acknowledge the need for investment in digital literacy

training. Limited and unreliable internet connectivity in some areas poses a significant barrier to e-governance adoption. Both citizens and officials emphasize the importance of expanding internet infrastructure to ensure equitable access. Concerns

about online security and data privacy are raised by citizens. Government officials acknowledge these concerns and highlight their efforts to strengthen cybersecurity measures and build trust in online platforms.

Table 3. Qualitative results - themes and subthemes.

Theme	Subtheme	Citizen quotes	Government official quotes
Accessibility	Overcoming Distance	"Before, I had to travel for hours to get to the government office. Now I can access services from my phone."	"E-governance has allowed us to reach citizens in remote areas who previously had limited access to services."
	Time Savings	"I used to spend a whole day at the municipal hall just to get a document. Now it takes a few minutes online."	"We have seen a significant reduction in waiting times for citizens since introducing online services."
Convenience	24/7 Availability	"I can apply for services anytime, anywhere. It's much more convenient than going to the office during working hours."	"Online platforms provide citizens with the flexibility to access services at their own convenience."
	Ease of Use	"The online system is easy to navigate. Even my grandmother can use it."	"We have designed our e-governance platforms to be user-friendly and accessible to all citizens."
Transparency	Information Access	"I can easily find the information I need on the government website. It's very transparent."	"E-governance promotes transparency by making government information readily available to the public."
	Tracking Applications	"I can track the status of my application online. I know exactly where it is in the process."	"Online tracking systems help us to be more accountable to citizens and improve service delivery."
Challenges	Digital Literacy	"I don't know how to use a computer. I need help to access online services."	"We need to invest in digital literacy training to ensure that all citizens can benefit from e-governance."
	Internet Connectivity	"The internet connection in my village is very slow. It's difficult to use online services."	"Expanding internet infrastructure is crucial for ensuring equitable access to e-governance."
	Trust and Security	"I'm worried about giving my personal information online. I don't trust the security of the system."	"We are working to strengthen cybersecurity measures and build trust in online services."

The quantitative data presented in Table 2 paint a compelling picture of the transformative impact of e-governance on public service delivery in Sulu. The significant increase in service utilization across various sectors following the introduction of e-governance platforms underscores the power of technology to bridge geographical barriers and improve access to essential services. This is particularly crucial in marginalized communities like Sulu, where geographical isolation, socioeconomic challenges, and security concerns have historically hindered access to public services. The observed increase in service utilization spans a wide range of sectors, including healthcare, social welfare, business permits, land titles, tax payments, birth certificate requests, and crime reporting. This broad impact highlights the versatility of e-governance in addressing diverse citizen needs. By providing online access to services, e-governance effectively removes the physical constraints that have long prevented citizens in remote areas from accessing essential services. This is particularly evident in the healthcare sector, where telemedicine consultations have witnessed a significant surge in usage, potentially improving health outcomes for those who previously lacked access to timely medical care. The qualitative findings presented in Table 3 provide further evidence of the positive impact of e-governance on service delivery. Both citizens and government officials emphasized the increased convenience, reduced waiting times, and improved efficiency associated with online service delivery. Citizens appreciate the ability to access services from the comfort of their homes, eliminating the need for time-consuming and often costly trips to government offices. This is particularly significant in Sulu, where travel between islands can be challenging and expensive. From the government's perspective, e-governance has streamlined administrative processes, reduced paperwork, and improved the overall efficiency of service delivery. This not only benefits citizens by reducing waiting times and improving service quality but also enhances the effectiveness of government operations, allowing officials to focus on more strategic tasks and improve resource allocation. Beyond improved service delivery, e-governance also

plays a crucial role in empowering citizens by promoting transparency and facilitating greater participation in government processes. Online platforms provide citizens with easy access to information about government services, requirements, and procedures, fostering a sense of transparency and accountability. This is particularly important in building trust between citizens and the government, especially in contexts where corruption and lack of transparency have been persistent challenges. The ability to track applications online further empowers citizens by providing them with a sense of control and transparency in the process. This feature allows citizens to monitor the progress of their applications, reducing uncertainty and anxiety associated with traditional bureaucratic processes. The significant increase in telemedicine consultations highlights the potential of e-governance to improve healthcare access in remote areas. This is particularly crucial in Sulu, where healthcare facilities are often limited and access to specialized medical care can be challenging. Telemedicine allows citizens to consult with healthcare professionals remotely, reducing the need for travel and potentially improving health outcomes. The increase in social welfare benefit applications suggests that e-governance has facilitated access to social safety nets for vulnerable populations. Online platforms provide a more convenient and accessible way for citizens to apply for benefits, reducing the stigma and bureaucratic hurdles often associated with traditional application processes. The substantial increase in business permit and land title applications indicates that e-governance has facilitated economic activities by simplifying administrative processes. Online platforms allow businesses to register and obtain permits more efficiently, reducing bureaucratic delays and promoting economic growth. Similarly, the streamlined process for land title applications can contribute to greater land tenure security and facilitate investment. The increase in tax payments and birth certificate requests demonstrates that e-governance has streamlined essential government services, making them more accessible and efficient for citizens. Online platforms provide a convenient and hassle-free way for citizens to fulfill their obligations

and access essential documents. The dramatic increase in online crime reporting highlights the potential of e-governance to improve public safety and community well-being. Online platforms provide a safe and accessible avenue for citizens to report crimes, potentially encouraging greater community participation in crime prevention efforts.¹¹⁻¹³

While the efficiency gains and improved access associated with e-governance are undeniable, its potential to empower citizens is equally significant. By increasing transparency, facilitating participation, and fostering trust, e-governance can fundamentally transform the relationship between citizens and their government. This shift towards a more participatory and citizen-centric model of governance is particularly crucial in marginalized communities like Sulu, where historical inequities and power imbalances may have eroded trust in government institutions. The findings of this study highlight the crucial role of e-governance in promoting transparency. Through online platforms, citizens gain access to a wealth of information about government services, requirements, procedures, and decision-making processes. Traditionally, citizens often found themselves at a disadvantage due to limited access to information about government operations. This information asymmetry could create opportunities for corruption, inefficiency, and arbitrary decision-making. E-governance platforms level the playing field by making information readily available to all, empowering citizens to hold government officials accountable. When citizens have access to information about how government services are delivered, the criteria for decision-making, and the allocation of resources, they are better equipped to monitor government performance and demand accountability. This can lead to improved service delivery, reduced corruption, and greater responsiveness to citizen needs. Access to information empowers citizens to make informed decisions about their interactions with the government. Whether it's applying for a permit, accessing healthcare services, or reporting a crime, citizens can utilize online platforms to understand the requirements, procedures, and potential outcomes, enabling them to make informed choices and navigate government processes with

greater confidence. E-governance not only provides citizens with access to information but also creates avenues for greater participation in government processes. This participatory dimension of e-governance is crucial for empowering citizens and strengthening democratic institutions. Online platforms often include feedback mechanisms, allowing citizens to provide input on government services, policies, and programs. This direct feedback loop enables citizens to voice their concerns, suggest improvements, and contribute to shaping government decisions. E-governance can facilitate online consultations on policy issues, allowing citizens to participate in discussions and provide input on proposed legislation or regulations. This can lead to more inclusive and responsive policymaking, reflecting the diverse needs and perspectives of the community. Some e-governance initiatives include dedicated e-participation platforms, where citizens can engage in discussions, propose initiatives, and collaborate with government officials on community development projects. These platforms can foster a sense of ownership and shared responsibility for community well-being. Trust is the bedrock of effective governance. When citizens trust their government, they are more likely to comply with regulations, participate in civic processes, and support government initiatives. E-governance can play a crucial role in building and strengthening this trust. By promoting transparency, e-governance demonstrates a commitment to openness and accountability, which can foster greater trust between citizens and the government. When citizens can see how government decisions are made and how resources are allocated, they are more likely to trust that the government is acting in their best interests. E-governance platforms can facilitate greater responsiveness to citizen needs and concerns. When citizens feel that their voices are heard and their feedback is taken seriously, it can strengthen their trust in government institutions. Reliable and efficient online services can also contribute to building trust. When citizens have positive experiences with e-governance platforms, they are more likely to view the government as competent and trustworthy. In the specific context of Sulu, where

historical inequities and power imbalances may have eroded trust in government institutions, e-governance offers a unique opportunity to empower citizens and foster a more participatory and inclusive model of governance. By providing access to information, facilitating participation, and promoting transparency, e-governance can help to rebuild trust, strengthen community engagement, and promote social cohesion. While the potential of e-governance for citizen empowerment is significant, it is important to acknowledge the challenges that need to be addressed to fully realize this potential. Bridging the digital divide is crucial to ensure that all citizens have the opportunity to benefit from e-governance initiatives. This requires investing in internet infrastructure, providing access to digital devices, and promoting digital literacy training, particularly in marginalized communities. E-governance platforms should be designed to be inclusive and accessible to all citizens, regardless of their age, education level, or socioeconomic background. This includes providing language support, user-friendly interfaces, and accessible formats. Concerns about online privacy and security can hinder citizen engagement with e-governance platforms. It is crucial to establish robust data protection mechanisms and build trust in the security of online services.¹⁴⁻¹⁷

While the findings of this study overwhelmingly support the transformative potential of e-governance in Sulu, it is crucial to acknowledge the challenges and barriers that need to be addressed to ensure its successful and equitable implementation. These challenges are multifaceted, encompassing technological, social, and economic dimensions. Failing to address these challenges could exacerbate existing inequalities and exclude marginalized communities from the benefits of e-governance. Digital literacy emerged as a key challenge in this study, with some citizens lacking the necessary skills to effectively utilize online platforms. This digital divide, characterized by unequal access to technology and digital skills, can create a significant barrier to e-governance adoption. Developing and implementing targeted digital literacy training programs is crucial for empowering citizens with the skills and knowledge

needed to navigate online platforms, access e-government services, and engage in online transactions. These programs should be tailored to the specific needs of different communities, considering factors such as age, education level, socioeconomic background, and language proficiency. Establishing community-based training centers can provide accessible and convenient learning opportunities for citizens, particularly in remote and underserved areas. These centers can offer hands-on training, personalized support, and access to digital devices and internet connectivity. Integrating digital literacy into the formal education curriculum can equip future generations with the essential skills needed to thrive in the digital age. This requires incorporating digital literacy modules into various subjects, providing access to digital learning resources, and training teachers in digital pedagogy. Leveraging existing community networks, such as libraries, community centers, and non-governmental organizations, can extend the reach of digital literacy training programs. These organizations can serve as trusted intermediaries, providing training and support to their respective communities. Limited and unreliable internet connectivity in certain areas, particularly in remote and underserved communities, poses a significant barrier to e-governance adoption. Expanding internet infrastructure is therefore essential to ensure equitable access to online services and bridge the digital divide. Governments should prioritize investments in expanding internet infrastructure, particularly in remote and underserved areas. This may involve subsidizing internet service providers, deploying broadband networks, and establishing public Wi-Fi hotspots. Public-private partnerships can leverage the expertise and resources of the private sector to expand internet infrastructure. This can involve collaborative initiatives to build and maintain network infrastructure, develop innovative solutions, and provide affordable internet access to underserved communities. Community-led initiatives can play a crucial role in expanding internet access in remote areas. This may involve establishing community-owned and operated internet networks, utilizing innovative technologies such as wireless

mesh networks, and promoting digital literacy within the community. Concerns about online security and data privacy were also raised by citizens in this study. Addressing these concerns is crucial for building trust in online platforms and encouraging wider adoption of e-governance services. Governments should prioritize investments in strengthening cybersecurity measures to protect online platforms and citizen data from cyber threats. This may involve implementing robust security protocols, conducting regular security audits, and raising awareness about cybersecurity best practices. Establishing clear and comprehensive data protection and privacy policies is essential for building trust in online services. This includes obtaining informed consent for data collection, ensuring data security and confidentiality, and providing citizens with control over their personal data. Communicating clearly and transparently about data protection and privacy policies is crucial for building trust. Governments should provide citizens with easy-to-understand information about how their data is collected, used, and protected. Combating misinformation and disinformation about online security and data privacy is essential for building trust. Governments should actively engage in public awareness campaigns to educate citizens about online risks and promote responsible online behavior. In addition to the technological challenges, there are also social and cultural barriers that can hinder e-governance adoption. Many citizens may be unaware of the availability of online services or the benefits of e-governance. Public awareness campaigns can help to address this challenge by promoting the advantages of using online platforms and providing information about available services. Language barriers can exclude citizens who are not proficient in the official language used in online platforms. Providing language support and translating online content into local languages can help to overcome this barrier. Cultural norms and practices can also influence e-governance adoption. For example, in some communities, there may be a preference for face-to-face interactions with government officials. Addressing these cultural nuances and adapting e-governance initiatives to local contexts can facilitate wider adoption.¹⁸⁻²⁰

4. Conclusion

This study provides compelling evidence for the transformative potential of e-governance in improving public service delivery and citizen engagement in Sulu, Philippines. By overcoming geographical barriers, enhancing efficiency, promoting transparency, and empowering citizens, e-governance has demonstrably bridged the service delivery gap in this marginalized region. The significant increase in service utilization across various sectors, coupled with positive feedback from both citizens and government officials, underscores the effectiveness of e-governance in enhancing accessibility, convenience, and trust in government services. However, the study also highlights the critical need to address challenges such as digital literacy, internet connectivity, and online security to ensure equitable access and maximize the benefits of e-governance. A holistic approach that encompasses infrastructure development, digital literacy training, and trust-building measures is crucial for successful and sustainable implementation. This study offers valuable insights for policymakers and practitioners seeking to leverage technology for inclusive and equitable service delivery in marginalized communities, emphasizing the importance of a citizen-centric approach that prioritizes accessibility, transparency, and participation.

5. References

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