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AWARENESS AND USAGE OF E-GOVERNMENT SERVICES AMONG RURAL COMMUNITIES IN GEMENCHEH, MALAYSIA

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ABSTRACT

The adoption of e-government services has become increasingly important in improving public service delivery and promoting digital inclusion, particularly in rural communities. However, the level of e-government usage among rural populations in Malaysia remains relatively low due to several socio-technical challenges. This study examines the factors influencing the usage of e-government services among adults in Gemencheh, Negeri Sembilan. A quantitative research approach was employed using a survey-based method. Data were collected from 100 respondents through a structured questionnaire distributed using simple random sampling. The study investigates the influence of digital literacy, awareness of e-government services, trust in government, accessibility, and perceived service quality on the usage of e-government platforms. Descriptive and inferential statistical analyses, including correlation and regression analyses, were conducted to examine relationships among the variables. The findings are expected to identify the most significant factors influencing e-government adoption among rural adults and to provide insights into the challenges marginalized communities face in accessing digital government services. The study contributes to the growing body of knowledge on rural digital transformation and offers practical implications for policymakers to strengthen digital inclusion strategies and improve the effectiveness of e-government initiatives in rural Malaysia.

Keywords: *Lack of adequate digitalinfrastructure, Access to necessary online resources, Awareness of government services, Usage of e-governmentservices, Technology AcceptanceModel (TAM)*

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INTRODUCTION

The rapid advancement of digital technology has significantly transformed the way governments deliver public services and interact with citizens (Lean et al., 2009; Apriliyanti et al., 2021). In recent years, e-government initiatives have become an essential component of public sector modernization, enabling governments to provide services more efficiently, transparently, and accessibly through digital platforms (Husin & Loghmani, 2017). E-government refers to the use of information and communication technologies (ICTs), particularly internet-based applications, to facilitate communication and service delivery between government agencies, citizens, businesses, and other stakeholders (Davis, 1989; Lean et al., 2009). The implementation of e-government systems has improved administrative efficiency, reduced operational costs, and enhanced citizen engagement in many countries (Apriliyanti et al., 2021).

Despite these advancements, disparities in digital access and technology adoption persist, particularly between urban and rural communities (Rahman, 2015; Bakon & Elias, 2020). Rural populations often face substantial barriers to accessing digital services due to inadequate technological infrastructure, limited internet connectivity, lower digital literacy levels, and insufficient awareness of available online government services (Marzuki & Arshad, 2016; Arshad et al., 2020). These challenges contribute to a persistent digital divide that restricts the effective utilisation of e-government services among rural residents (Masa'deh et al., 2023). Consequently, many rural communities remain excluded from the benefits of digital governance and public service innovation (Alfalah, 2019).

In Malaysia, the government has actively promoted digital transformation through initiatives such as the Malaysia Digital Economy Blueprint (MyDIGITAL) and various e-government platforms aimed at improving public service delivery (Husin & Loghmani, 2017). However, the effectiveness of these initiatives largely depends on citizens' awareness and acceptance of digital government services (Jamaludin & Olowolayemo, 2026). Although urban populations have demonstrated increasing adoption of e-government systems, the level of awareness and usage among rural communities remains relatively underexplored (Shuib et al., 2019). This issue is particularly important because rural populations constitute a significant segment of Malaysian society and require equal access to government services and digital opportunities (Marzuki & Arshad, 2016).

Previous studies have identified several factors influencing the adoption of e-government services, including perceived usefulness, perceived ease of use, trust in government, digital literacy, and accessibility of online platforms (Lean et al., 2009; Kamarudin & Omar, 2021). Among these factors, awareness of e-government services plays a crucial role in encouraging citizens to utilise available digital platforms effectively (Masa'deh et al., 2023). Citizens who are aware of the existence, functions, and benefits of e-government services are more likely to adopt and engage with these systems (Arshad et al., 2020). However, limited awareness may reduce participation and hinder the success of digital governance initiatives (Jamaludin & Olowolayemo, 2026).

The Technology Acceptance Model (TAM), introduced by Davis (1989), provides a widely accepted theoretical framework for understanding individuals' acceptance and use of technology. TAM suggests that users' behavioural intentions toward technology adoption are influenced primarily by perceived usefulness and perceived ease of use (Davis, 1989). In the context of e-government services, awareness can contribute to positive perceptions of usefulness and accessibility, thereby influencing citizens' intentions to adopt and use digital government platforms (Lean et al., 2009; Jasimuddin et al., 2017). Therefore, applying TAM in this study provides a suitable foundation for examining the relationship between awareness and usage of e-government services among rural populations.

Although numerous studies have investigated e-government adoption in urban or developed settings, research on

rural communities in Malaysia, particularly in smaller localities such as Gemencheh, Negeri Sembilan, remains limited (Rahim & Ghani, 2025). Furthermore, existing studies frequently emphasize technological infrastructure and digital literacy while giving less attention to awareness as a determinant of e-government service usage (Hassan & Azan, 2023). This gap highlights the need for further investigation into how awareness influences the adoption and utilisation of e-government services in rural contexts.

Therefore, this study aims to examine the relationship between awareness of e-government services and their use among residents in Gemencheh, Negeri Sembilan. By identifying the level of awareness and understanding its influence on service utilisation, this study contributes to the broader discourse on digital inclusion and rural digital transformation (Apriliyanti et al., 2021). The findings are expected to provide valuable insights for policymakers and government agencies to develop targeted strategies that enhance public awareness, improve citizen participation, and strengthen the effectiveness of e-government initiatives in rural communities.

LITERATURE REVIEW

Awareness of E-government Services.

The "awareness of e-government services" independent variable measures how well-informed and cognisant individuals are about the online services provided by their government. It evaluates the extent to which citizens are aware of the features, benefits, and accessibility of online government services (Chohan & Hu, 2020). Public awareness of e-government services may be influenced by several factors, including user-friendly interfaces, educational initiatives, communication strategies employed by government agencies, and the visibility of online services. Understanding the level of awareness among citizens is essential for evaluating how effectively governments promote digital services and enhance citizen engagement.

Awareness of e-government services is analysed through several factors or measurement items. First, respondents' perceptions regarding whether e-government services provide accurate and up-to-date information tailored to their needs were examined. The study also assessed the extent to which individuals believe that e-government websites enable active participation in political affairs, such as providing feedback to government agencies. In addition, respondents were asked to evaluate the potential time and cost savings gained from using e-government services. Finally, the study explored how effectively e-government platforms facilitate communication and engagement with public officials. These dimensions provide valuable insights into how individuals perceive and interact with digital governance processes, thereby informing strategies to improve service delivery and citizen participation in the digital environment.

It is important for citizens to be well-informed about e-government services for several reasons. Increased awareness encourages citizens to engage with digital government services and participate in online governmental activities, which ultimately enhances civic engagement. By improving awareness of available digital services, citizens are more likely to utilise them, thereby maximising the benefits of e-government initiatives and increasing service adoption rates (Tremblay, Mellouli, Cheikh-Ammar, & Khechine, 2023).

Furthermore, raising awareness about digital tools and platforms that allow citizens to engage with government processes and access information can improve transparency in government operations. Researchers should therefore investigate the impact of awareness on the utilisation of e-government services to identify gaps in public knowledge and propose strategies for improving awareness campaigns. Such efforts can enhance public understanding of available digital services and contribute to greater citizen engagement, improved service delivery, and a more effective and responsive relationship between governments and citizens. Ultimately, this can foster a more open, inclusive, and efficient governance system (Yuan et al., 2023).

Usage of E-government Service

The dependent variable in this study is the usage of e-government services, which refers to the extent to which individuals and organisations utilise digital platforms to access public services and communicate with government institutions. This variable reflects the degree of engagement, participation, and dependence on electronic government systems for activities such as accessing information, submitting online applications, conducting digital payments, and interacting with public agencies. The effectiveness of e-government service usage is strongly influenced by factors such as accessibility, usability, awareness of available services, trust in digital systems, and user satisfaction with government online platforms (Alawneh et al., 2013; Athmay et al., 2016).

The growing adoption of e-government services has become an important indicator of successful digital governance and public sector transformation. Effective implementation of digital government platforms can improve administrative efficiency, reduce service delivery costs, and strengthen communication between governments and citizens. Previous studies have shown that service quality, ease of use, accessibility, and system reliability significantly influence citizens' intentions to adopt and continue using e-government services (Chan et al., 2021; Wirtz & Kurtz, 2016). In addition, citizen satisfaction and trust in online government systems are recognised as critical determinants of long-term usage behaviour and acceptance of digital public services. Therefore, understanding the factors that influence the usage of e-government services is essential for policymakers and government agencies seeking to enhance transparency, accessibility, and the overall effectiveness of online public service delivery.

This study employs a quantitative research approach to investigate the relationship between the independent variables and the dependent variable, namely the usage of e-government services. Data will be collected through structured questionnaires distributed to respondents and analysed using statistical techniques, including descriptive, correlational, and regression analyses. These methods are appropriate for identifying the strength and significance of relationships between variables and for determining the factors that influence citizens' adoption and continued use of e-government services (Sachan et al., 2018; Almaiah & Nasereddin, 2020). The findings of this study are expected to provide valuable insights for governments and policymakers in developing effective strategies to improve digital inclusion, increase public access to technology, and encourage greater utilisation of e-government services, particularly among rural and underserved communities.

TAM Theory

The Technology Acceptance Model (TAM), developed by Davis (1989), is one of the most widely used theories for explaining technology adoption behaviour. TAM suggests that individuals are more likely to use a technology when they perceive it as useful and easy to use. The theory has been extensively applied in studies related to e-government services, digital platforms, and online systems.

In the context of this study, TAM is considered suitable because it explains how factors such as awareness, accessibility, trust, perceived quality, and digital literacy influence citizens' usage of e-government services. Citizens who are aware of available digital services and possess adequate digital skills are more likely to perceive e-government platforms as beneficial and accessible. Similarly, trust in government and perceived service quality can strengthen users' confidence in adopting online government services.

Previous studies have supported the application of TAM in e-government research. Chohan and Hu (2020) found that digital competency and awareness positively influence e-government adoption. Tremblay et al. (2023) also

reported that citizens' perceptions and technological readiness significantly affect their willingness to use digital government platforms. Furthermore, Venkatesh et al. (2003) emphasized that users' acceptance of technology is strongly influenced by perceived usefulness and ease of use.

The correlation analysis in this study further supports TAM, as all independent variables demonstrated significant positive relationships with usage of e-government services. Awareness showed the strongest correlation with usage ($r = 0.782$, $p < 0.001$), indicating that citizens with higher awareness are more likely to adopt e-government platforms.

Therefore, TAM provides a strong theoretical foundation for understanding the factors influencing the usage of e-government services among rural communities in Gemencheh, Negeri Sembilan.

Research Framework

The conceptual framework of this study was developed based on the Technology Acceptance Model (TAM) proposed by Davis (1989). TAM explains that individuals are more likely to adopt and use technology when they perceive it as useful, accessible, and easy to use. In the context of e-government services, citizens' acceptance and usage of digital government platforms are influenced by several technological and behavioural factors.

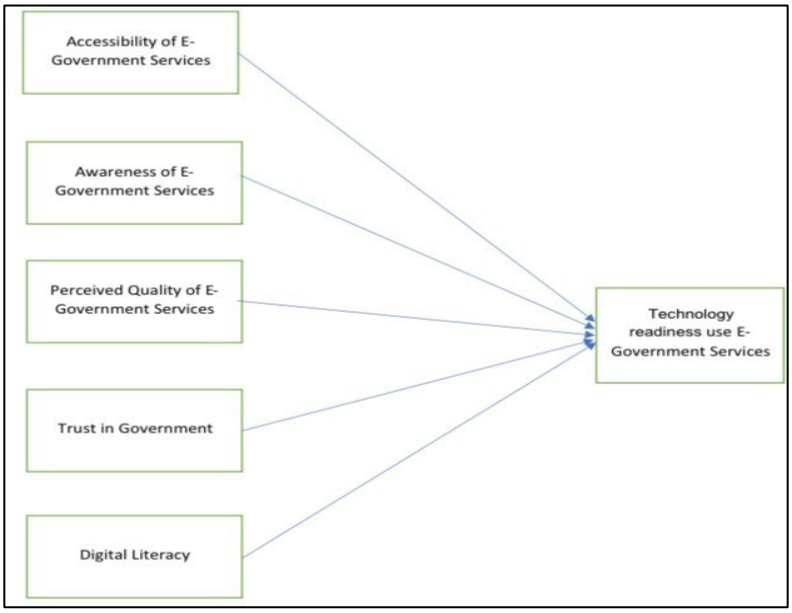
This study proposes that accessibility, awareness, perceived quality, trust in e-government services, and digital literacy significantly influence the use of e-government services among rural communities in Gemencheh, Negeri Sembilan.

Accessibility refers to the extent to which citizens can easily access online government platforms and internet facilities. Awareness reflects citizens' knowledge and understanding of available digital government services. Perceived quality refers to users' perceptions regarding the efficiency, reliability, and effectiveness of e-government platforms. Trust in government measures citizens' confidence in the government's ability to provide secure and reliable online services, while digital literacy refers to individuals' capability to use digital technologies effectively.

The correlation analysis supports the proposed framework, as all independent variables demonstrated positive and significant relationships with the usage of e-government services. Among all variables, awareness of e-government services showed the strongest relationship with usage ($r = 0.782$, $p < 0.001$), followed by trust in government ($r = 0.753$, $p < 0.001$) and perceived quality of e-government services ($r = 0.710$, $p < 0.001$). These findings indicate that citizens who are more aware, digitally skilled, and confident in government services are more likely to adopt e-government platforms.

Therefore, the framework provides a comprehensive understanding of the factors influencing e-government service usage among rural communities and offers a strong theoretical foundation for the study.

Figure: 1
Conceptual Framework



Hypotheses

H1: Accessibility of e-government services has a significant positive relationship with usage of e-government services.

H2: Awareness of e-government services has a significant positive relationship with usage of e-government services.

H3: Perceived quality of e-government services has a significant positive relationship with usage of e-government services.

H4: Trust in government has a significant positive relationship with the usage of e-government services.

H5: Digital literacy has a significant positive relationship with the usage of e-government services.

METHODOLOGY

Research Approach and Design

This study adopts a quantitative research approach to examine the factors influencing adults' usage of e-government services in rural Gemencheh, Negeri Sembilan. A survey research design is employed, whereby respondents are required to complete a standardized questionnaire. The target population consists of permanent residents of Gemencheh aged between 15 and above, representing different demographic backgrounds within the rural community. The quantitative approach is considered suitable because it enables the researcher to systematically measure and analyze the relationship between several influencing factors and the usage of e-government services.

Research Instrument

The primary research instrument used in this study is a structured questionnaire consisting of several sections. The questionnaire is designed to collect data on respondents' demographic profiles and variables related to e-government adoption. The main constructs measured include:

- Digital literacy
- Awareness of e-government services
- Trust in government
- Accessibility of e-government services
- Perceived quality of e-government services
- Usage of e-government services

The questionnaire uses closed-ended questions and Likert-scale items to ensure consistency and ease of analysis. Before the actual data collection process, a pilot test will be conducted to assess the clarity, comprehensibility, and relevance of the questionnaire items. Pilot testing is important to ensure the instrument's validity and reliability. The reliability of the questionnaire items will be evaluated using Cronbach's alpha, with values of 0.70 or above indicating acceptable internal consistency.

Sampling Technique and Sample Size

This study employs probability sampling, specifically simple random sampling, to ensure that every individual in the target population has an equal chance of being selected. This technique helps reduce sampling bias and increases the representativeness of the sample.

A total of 100 respondents were selected from the rural population of Gemencheh, Negeri Sembilan. The sample size is considered adequate for conducting statistical analyses such as correlation and regression analysis.

Data Collection Procedure

Data were collected by distributing questionnaires to selected respondents in Gemencheh. Respondents were informed of the purpose of the study and that their participation would be voluntary. Confidentiality and anonymity of respondents' information will also be assured to encourage honest and accurate responses.

Data Analysis

The collected data were analyzed using both descriptive and inferential statistical methods. Descriptive statistics such as frequencies, percentages, means, and standard deviations will be used to summarize respondents' demographic information and overall responses.

Inferential statistics, including correlation analysis and multiple regression analysis, will be used to examine the relationships between the independent variables (digital literacy, awareness, trust, accessibility, and perceived quality) and the dependent variable (usage of e-government services).

The findings from this study are to provide a deeper understanding of the factors influencing the adoption of e-government services among adults in rural areas. Ultimately, the study aims to provide policymakers and government agencies with useful insights to improve digital inclusion and enhance e-government initiatives for marginalized rural communities.

FINDINGS AND DISCUSSION

Correlations

		Accesibility	awareness	Quality	Trust	digital	DVegovernment
Accesibility	Pearson Correlation	1	.691**	.647**	.712**	.415**	.636**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001
	N	99	99	99	99	98	99
awareness	Pearson Correlation	.691**	1	.748**	.829**	.646**	.782**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001
	N	99	99	99	99	98	99
Quality	Pearson Correlation	.647**	.748**	1	.733**	.644**	.710**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001
	N	99	99	99	99	98	99
Trust	Pearson Correlation	.712**	.829**	.733**	1	.557**	.753**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001
	N	99	99	99	99	98	99
digital	Pearson Correlation	.415**	.646**	.644**	.557**	1	.598**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001
	N	98	98	98	98	98	98
DVegovernment	Pearson Correlation	.636**	.782**	.710**	.753**	.598**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	
	N	99	99	99	99	98	99

**. Correlation is significant at the 0.01 level (2-tailed).

Within the scope of the study, the researchers are examining how people's awareness of e-government services relates to several aspects, including interaction with government officials, savings, timely delivery of accurate data, and the ability to voice opinions. Each item in the supplied tables denotes a statement about how people view e-government services. It is possible that the respondents were asked to score each statement on a scale from 0% to 100% based on how much they agreed with it.

In this case, the first question was: "Does the e-government service offer the exact information I need?" The average score of 3.44 for item 1 indicates that respondents' perceptions of e-government services' ability to provide accurate information are fairly positive. This shows that most respondents generally concur that these platforms provide the precise informationthey need. The comparatively low standard deviation of 0.539 indicates a reasonable level of agreement among participants, indicating a uniform assessment of the accuracy of data provided by e-governance services.

The second question is, do e-government services typically offer current information? Item 2, which has a mean score of 3.47, suggests that respondents are somewhat more in agreement than item 1 about the timeliness of information delivered by e-government services. This implies that most respondents think these platforms provide current information. The respondents' consistent view of thetimeliness of information provided by E-Government services is indicated by a standard deviation of 0.578, suggesting a level of consensus similar to that observed in item 1.

The third question is, can I actively voice my opinions to the government using e-government websites? The

respondents' level of agreement regarding the effectiveness of e-government websites in encouraging active participation in government matters was somewhat lower (item 3, mean score of 3.35). This suggests that although respondents generally express a modest level of agreement, there may be limitations to the platforms' ability to facilitate public interaction effectively. Compared with items 1 and 2, the standard deviation of 0.577 indicates a stable but somewhat more variable view among respondents.

Apart from that, the question is whether using e-government services can save money and time. With the highest mean score of 3.52, item 4 stands out as receiving substantial support from respondents for the potential time and money savings associated with using e-government services. This shows that respondents generally accept the efficiency benefits of such platforms. A widespread beliefin the savings provided by E-Government services is indicated by a standard deviation of 0.612, which is significantly greater than those of items 1 and 2. This suggests a rather consistent perception among respondents.

The final question is, can I use e-government services to communicate with government officials? Item 5 shows a somewhat positive view among respondents about the usefulness of e-government platforms in facilitating communication with government officials, with a mean score of 3.45. This shows that most respondents think these sites' communication channels are easily accessible. The standard deviation of 0.611 suggests that respondents' perceptions of the communication skills of e-government services are stable, consistent with the level of consensus shown in items 1 and2.

In conclusion, the examination of these issues sheds light on the various perspectives that respondents hold regarding e-government services. Benefits like savings and access to information are generally well received, although there may be room for improvement in certain areas, including active citizen engagement.

CONCLUSION

In conclusion, this study explores the complex environment of e-government services in rural areas, with a particular emphasis on Gemencheh, Negeri Sembilan, Malaysia. The report provides detailed insights into the problems and achievements of e-government programmes in rural areas by
carefully analysing patterns of awareness and utilisation.

A significant finding of the study is the remarkable level of knowledge among participants about the existence and potential benefits of e-government platforms. This awareness points to a potentially strong basis for rural communities to adopt and use digital governance technologies. The survey also emphasises favourable opinions about the increased information accessibility and efficiency improvements made possible by e-government services. These opinions imply a widespread understanding of the advantages these platforms can provide, including improved citizen access to government resources and information and streamlined processes.

Considering these advantageous features, the study also points out certain areas that need focus and development. For example, questions have been raised about how well e-government platforms encourage proactive citizen engagement. This indicates the need to develop ways to improve engagement and interaction in these virtual forums to ensure they serve as channelsfor important communication and cooperation between the general public and governmental organisations. The study also emphasises difficulties with the accuracy and timeliness of information shared via e-government channels. Since citizens depend on current and accurate information to make educated decisions and participate in government processes, addressing these issues is essential to preserving credibility and confidence in digital governance projects.

Despite these obstacles, the study emphasises how revolutionary e-government servicesmight be in reducing the gap between the public and public servants. Policymakers and stakeholders can customise interventions to address

specific adoption and utilisation hurdles in rural contexts by drawing on insights from the Technology Acceptance Model (TAM) and accounting for other factors such as digital literacy and government trust.

In the end, this study advances our knowledge of the potential benefits and difficulties of implementing e-government in rural communities. Using these insights, policymakers may formulate targeted interventions to fortify digital governance projects. This will ultimately cultivate a governance structure that is more inclusive, transparent, and responsive, thereby better serving the needs of rural communities.

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