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International Journal of Data and Network Science

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Investigating the role of e-service quality and information quality on e-government user satisfaction in the immigration department

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C H R O N I C L E

Article history:
Received: January 18, 2024
Received in revised format: February 20, 2024
Accepted: May 8, 2024
Available online: May 8, 2024

Keywords:
e-service quality
Information quality
e-government
User satisfaction
Immigration office
PLS-SEM

A B S T R A C T

This research aims to analyze variable service quality on e-government user satisfaction and analyze information quality variables on e-government user satisfaction at the immigration office. The research method used in this research is associative quantitative research which aims to determine the relationship between two or more variables. In this way, we can build a theory that functions to predict and control a phenomenon. The population in this study were all immigration office employees. In this research, an analysis model is used, namely Partial Least Square-Structural Equation Modeling (PLS-SEM). In this study, the number of respondents was 876 immigration office employees who used e-government. The sampling technique used in this research is non probability sampling. In this research, the data collection method used was the questionnaire method. The instrument used to measure this research variable is a 7-point Likert scale. Data processing in this research uses SmartPLS software. The stages of data analysis in this research are the outer model test which includes convergent validity, discriminant validity and composite reliability as well as inner model analysis, namely hypothesis testing. The results of this research are that variable service quality has a positive and significant relationship to e-government user satisfaction at the immigration office and the information quality variable has a positive and significant relationship to e-government user satisfaction at the immigration office.

1. Introduction

Digitalization of public services has become a priority in many countries, including Indonesia. One effort to make this happen is by implementing a digital passport creation service via the M-Paspor application. The implementation of this application in realizing the digitization of public services is a relevant issue to study. Passport issuance is one of the important public services provided by the immigration office, but there are still obstacles such as long queues and complicated procedures. Therefore, it is necessary to try to improve the quality and efficiency of passport-making services using technology such as the M-Paspor application. Some studies have attempted to implement passport services in Indonesia (Kamaruddin et al., 2024; Malik et al., 2016). Research shows that using an online queue registration system can reduce waiting times and increase customer satisfaction. In this digital era, rapid developments have occurred in the field of information technology, especially with the presence of the internet, which has encouraged various areas of life to utilize this technology as optimally as possible (Noori, 2022). The implementation of M-Passport is part of the Directorate General of Immigration's efforts to improve public services by utilizing information technology in passport services. The use of information technology helps increase the effectiveness and efficiency of work in processing passports at the immigration office. Based on several previous studies, the

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ISSN 2561-8156 (Online) - ISSN 2561-8148 (Print)

doi: 10.5267/j.ijdns.2024.5.008

present study is interested in seeing the implementation of the M Passport application in realizing the digitalization of public services. According to Ming et al. (2018), the use of digital technology in the m-Passport program provides many significant benefits. Initially, this program speeds up the passport issuance process by reducing bureaucracy and complicated procedures. Residents no longer need to queue physically at the Immigration office but can submit applications online and carry out the verification process via the application. This saves time and energy for citizens who want to get or renew their passports. Second, the m-Passport program also increases the accuracy and security of information. By using data technology, individual information required in the passport application process can be uploaded directly by the applicant via the application, thereby reducing the risk of errors and manipulation of information. Not only that, the security system integrated into the application also provides better protection for the confidentiality of individual citizen information (Ameen et al., 2019). Therefore, implementing E-Government is a concrete step that must be taken. The implementation of E-Government is expected to bring benefits in empowering the community through increasing access to information, improving government services to the community, strengthening interaction between business circles and the government in related industries, and improving government management that is more efficient and transparent in public services (Kafaji, 2013).

According to Purwanto et al. (2023), the very rapid development of information systems and information technology has also been considered a very important resource for organizations, both government organizations and private organizations today. Information systems and information technology not only play an essential role as support but also play a key operational, high potential, strategic role and can be used to support effectiveness, efficiency and productivity in an organization. The government can cause failure in the implementation process. The cultural transformation of the government bureaucracy is encouraged to quickly adapt to the e-government that will take effect. Management systems and work processes are likely to change quite a lot when this electronic-based government environment is implemented. But this also provides opportunities for structuring various aspects or fields in state life. The public's need for quality services and information provided by the government is increasing (Skordoulis et al., 2017). The government is encouraged to continue to strive to meet public needs optimally. One step that can be implemented by the government is to implement electronic-based services or what is often called e-government. Government agencies can take advantage of advances in information and communication technology to provide the maximum possible services for public use. Through e-government, the government can apply information and communication technology to improve the quality of services provided. Lack of correct understanding of the e-Government paradigm (Sung et al.,2009).

According to Praditya and Purwanto (2024) in economic terms, the benefits of e-government include reducing transaction costs for better capacity with service targets, increasing the scope and quality of service delivery, increasing response capacity in overcoming poverty issues and increasing income; In social terms, the benefits of e-government are quite diverse, starting from creating jobs in the third sector, improving education and health systems, better targeting of government services, increasing capacity in providing safety and security. In many cases these benefits can be evaluated in political terms and can be quantified in financial terms; and in terms of government, the benefits of e-government can increase the achievement of good governance in terms of increasing openness, transparency, accountability, or democracy compared to conventional government. E-government can also increase community participation so that it can strengthen the existing democratic system (Sung et al., 2009).

The importance of developing e-government can provide benefits for public services, including the following: (a) Better services to the community. Information can be searched from the office, or home, without having to deliberately come to a government office if there is an internet network; (b) Improved relations between government, business actors and civil society (Skordoulis et al., 2017). It is hoped that openness can change relations between various parties for the better because this openness is expected to eliminate suspicion and resentment from all parties towards the government; (c) Community empowerment through easily obtained information. Another example is the profile of an area displayed online with its various advantages and needs, which can provide business opportunities for people in other areas without having to visit the area concerned; (d) Government implementation is more efficient. For example, disseminating various district government products to all apparatus will be cheaper if it is done online (Zhao et al., 2007). Regent's instructions can be faster and cheaper when delivered via the Internet rather than having to convene all district government officials (especially sub-district heads and village heads); and (e) For the government, producing important letters and documents will be easier and faster. Government implementation becomes more efficient and tracking a person's data/information can be carried out more easily. Therefore, e-government is needed to increase accuracy, clarity, responsibility, and transparency in government management to increase public trust in public services, especially from bureaucratic officials (Goh, et al.,2012).

According to Ming et al. (2018), service quality is a comparison between the service that consumers feel (perception) and the service quality that consumers expect. Based on this opinion, service quality is providing service excellence to achieve customer desires or expectations. According to Praditya (2024), the five main dimensions of service quality are physical evidence, circumstances, responsiveness, assurance, and empathy. Customer satisfaction is the level of someone's feelings after comparing the performance (or results) they perceive compared to their expectations. Customer satisfaction is a consumer's feeling as a response to the product or service that has been consumed. In general, satisfaction can be interpreted as a comparison between the service, or results received by the consumer and the consumer's expectations, the service or results received must be at least the same as the consumer's expectations, or even exceed them (Lee & Levy, 2014). This research aims to analyze

variable service quality on e-government user satisfaction and analyze information quality variables on e-government user satisfaction at the immigration office.

2. Literature review

2.1 e-service quality

According to Purwanto et al. (2023) service quality is a foundation for service marketing to strengthen performance quality, since the core of the product being marketed is quality performance and the performance itself will be purchased by customers. E-service quality, also known as e-service quality, is a development of the Service model Quality (SERVQUAL). In principle, the e-service quality model is an adaptation and extension of the traditional SERVQUAL model in the context of online shopping. E-Service quality is an activity that provides a comprehensive assessment and evaluation of the quality of service to consumers (Hariguna et al., 2017). E-Service Quality is a new service for consumers facilitating in an electronic environment which is defined as the delivery of services with more sophisticated media and new media, namely the web. There are several internal dimensions of electronic service quality, where several dimensions constitute the core of electronic service quality, namely: a. Efficiency, Ease, and speed in accessing and using the site. Efficiency also includes the customer's ability to access the website, search for the desired product and information related to that product and leave the site with minimal effort. b. Fulfilment of needs, actual company performance contrasts with what is promised via the website. Fulfilment includes the accuracy of promised services, such as product stock availability and product delivery at the desired time. c. Availability of System Functionality is a sophisticated technological technique related to the parts of the site that are available and can function properly as they should. d. Privacy is the degree to which a site can protect consumers' personal information. e-service quality is the overall evaluation by consumers of the caliber and superiority of the e-service offering in the virtual marketplace. Likewise, e-service quality is the extent to which a website facilitates efficient, effective shopping, purchasing and delivery (Fan & Yang, 2015).

2.2 Information quality

Information quality is a characteristic of the desired quality of an information system and the desired quality of information product characteristic information (Danila & Abdullah, 2014). System quality is the quality of the combination of hardware and software in an information system. It can be concluded that system quality is a characteristic of the desired quality of the system itself which is a combination of several elements to produce quality information that can assist decision-making. Information quality is a characteristic inherent in information so that information is meaningful for users and gives confidence to users, so it is useful in making decisions. It was concluded that Information quality is the content, form, and time characteristics inherent in information that provide value and benefits to users and give users confidence to use the information. Information quality is a characteristic inherent in information so that information is said to be meaningful for users and gives confidence to users so that it can be useful in various decision-making processes (Lee & Levy, 2014). Information quality is a measurement that focuses on the output produced by the system, as well as the value of the output for information users. According to Malik et al. (2016), high-quality information is needed to produce high-quality decisions. If the output produced by the information system does not match the criteria, then the decision-making process will be difficult.

2.3 User satisfaction

According to Praditya and Purwanto (2024), user satisfaction is a person's feeling of happiness or disappointment resulting from the performance of a company's product/outcome which is related to customer expectations. User satisfaction is the user's response to the use of information system output. The user satisfaction dimension is the user's level of satisfaction when using the information system. This is considered as one of the most important steps of a successful model. Information system user satisfaction can be assessed by using the criteria: adequacy, effectiveness, efficiency, overall satisfaction, enjoyment, information satisfaction, and system satisfaction. User satisfaction indicators also reveal measures as follows: 1. Content is user satisfaction seen from the content (Zhao et al., 2007). The content usually consists of functions and modules used by the user and the information produced that suits the user's needs. 2. Accuracy is user satisfaction from the accuracy of data when receiving input and then processing it into information. 3. Format is user satisfaction seen from the output produced. 4. Ease of use is user satisfaction in terms of user convenience. In using the system such as the process of entering data, processing data, and searching for needed information. 5. Timeliness is user satisfaction in terms of the accuracy of system time in presenting or providing the required data and information by users.

2.4 E-Government

E-government is using information and communication technology (ICT) to promote more efficient government and effective cost reduction, facilitate government service facilities provide access to information for the public, and make government more responsible to the public (Uchenna & Nworah, 2020). E-Government is the use of information technology by the government to provide information and services for its citizens, business matters, and other matters relating to government. e-Government can be applied to the legislature, judiciary, or public administration, to improve internal efficiency, deliver public services, or democratic governance processes (Wong & Jackson, 2017). The most expected benefits from e-government are

increased efficiency, convenience, and better accessibility of public services. E-Government has many definitions where almost every important institution or even state government has a definition of E-Government. However, these definitions are usually not much different, the essence of which is the use of Technology and Information in Government Activities. According to Rahman et al. (2021), e-government is using information and communication technology (ICT) to promote more efficient government and effective cost reduction, facilitate government service facilities provide access to information for the public, and make government more responsible to the public.

2.5 The relationship between e-service quality and user satisfaction

The quality of online services will provide satisfaction. Dimensions of service quality and their relationship with satisfaction state that a successful strategy for satisfying customers is to provide superior online service quality (Lai & Pires,2010). Key factors that influence online customer satisfaction in evaluating various online stores on agent websites. Some results show that customers are satisfied if the quality of the online services provided truly meets customer expectations. Other researchers found a level of positive associativity between online service quality and satisfaction. Some relationships also exist among service quality, customer satisfaction and company image. Service quality has a positive effect on customer satisfaction and company image. Customer satisfaction has a positive effect on company image (Uchenna & Nworah, 2020). Service quality has a significant effect on customer satisfaction and quality (Setiawanta, 2022; Syahril et al., 2022). The company will be able to provide a sense of satisfaction to customers. According to Rohana (2019), service quality is the difference between customer expectations and the services provided by the company, service quality is the consumer's attitude which is related to the results of a comparison between expectations of service and their perceptions. Service quality is all activities aimed at meeting customers' needs and desires so that they meet their expectations. Based on these descriptions, a hypothesis is proposed, namely:

H_1: *e-Service quality has a positive and significant effect on user satisfaction.*

2.6 The relationship between information quality and user satisfaction

According to Syahril et al. (2022), information quality plays an important role in increasing information user satisfaction, information quality makes a positive contribution to organizational performance and user satisfaction and loyalty. According to Praditya and Purwanto (2024), information quality plays a significant role in increasing user performance and satisfaction. The quality of information in an organization will encourage user satisfaction (Uchenna & Nworah, 2020). Other research conducted by Setiawanta (2022) and Syahril et al. (2022) stated that information system users will be more comfortable and satisfied if the information presented is of high quality. Based on this study, the following hypothesis was formulated:

H_2: *Information quality has a positive and significant relationship with user satisfaction.*

3. Method

The research method used in this research is associative quantitative research which aims to determine the relationship between two or more variables. In this way, we can build a theory that functions to predict and control a phenomenon. The population in this study were all immigration office employees. In this research, an analysis model is used, namely Partial Least Square -Structural Equation Modeling (PLS-SEM). In this study, the number of respondents was 876 immigration office employees who used e-government. The method for determining sample respondents used in this research is non-probability sampling and research data was obtained by distributing online questionnaires distributed via social media. This research instrument uses a 7-point Likert scale and data processing uses SmartPLS 3.0 software. The data analysis stage of this research is testing the outer model which consists of convergent validity, discriminant validity and composite reliability tests. The next test is the inner model, namely hypothesis testing.

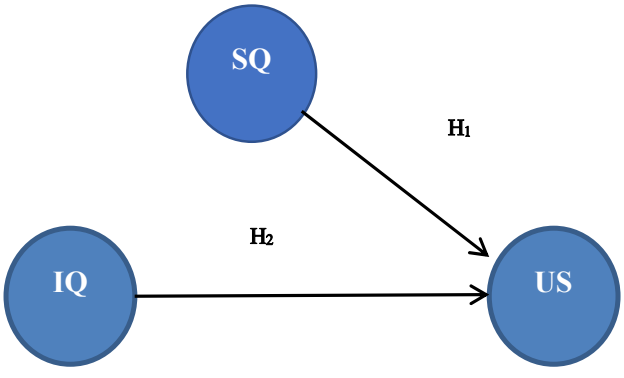

Fig. 1. Research Model

4. Result and Discussion

4.1 Outer Model Analysis

Outer model analysis is an evaluation of the relationship between variables and their indicators. The following is a display of the SmartPLS output results below:

Table 1
Validity and reliability testing

Variable	Item	Loading	CR	AVE
e-Service quality	SQ1	0.803	0.821	0.721
	SQ 2	0.819		
	SQ 3	0.706		
Information Quality	IQ1	0.729	0.804	0.754
	IQ2	0.819		
	WE3	0.703		
User Satisfaction	IQ1	0.819	0.806	0.792
	IQ2	0.815		
	IQ8	0.719		

4.2 Convergent Validity

To test convergent validity, the outer loading value is used. An indicator is declared to meet convergent validity in the good category if the outer loading value is > 0.7, but an outer loading value between 0.5-0.6 is considered sufficient. The outer loading value of each indicator in the research variable appears in Table 1.

4.3 Discriminant Validity

Discriminant Validity is looking at and comparing discriminant validity and the square root of the average extracted (AVE). If the AVE square root value for each construct is greater than the correlation value between the construct and other variables in the model, then it is said to have good discriminant validity values and the expected AVE value is > 0.5. The AVE value for each variable is presented in Table 1. Based on the data presented in Table 1 above, it is known that the AVE value for all variables is > 0.5. Thus, it can be stated that each variable has good discriminant validity.

4.4 Composite Reliability

Composite Reliability is an index that shows the extent to which a measuring instrument can be trusted to be relied upon. Data that has composite reliability > 0.7 has high reliability. The composite reliability value of each variable is shown in the following table. Based on the data presented in Table 1 above, the composite reliability value for all variables is > 0.7. These results indicate that each variable has met composite reliability so it can be concluded that all variables have a high level of reliability.

4.5 Cronbach's Alpha

The reliability test with composite reliability above can be strengthened by using Cronbach's alpha value. A variable can be declared reliable or meets Cronbach's alpha if it has a Cronbach's alpha value > 0.7. The Cronbach's alpha value of each variable appears in Table 2. Based on the data presented above in Table 2, Cronbach's alpha value of each variable is> 0.7. Thus, these results can indicate that each research variable has met the requirements for Cronbach's alpha value, so it can be concluded that all variables have a high level of reliability.

Table 2
Cronbach's alpha testing

Variable	Item	Loading	Cronbach's alpha
Service quality	SQ1	0.803	0.798
	SQ2	0.819	
	SQ3	0.706	
Information Quality	IQ1	0.729	0.702
	IQ2	0.819	
	IQ3	0.703	
User Satisfaction	IQ1	0.819	0.729
	IQ2	0.815	
	IQ8	0.719	

4.6 Hypothesis testing

Based on the analysis of the data that has been processed and was carried out by looking at the t-statistic values and probability values. The research hypothesis can be declared accepted if the t statistic is > 1.96 and the probability value is < 0.05. The following are the output results from SmartPLS shown in Table 3 and Fig 2.

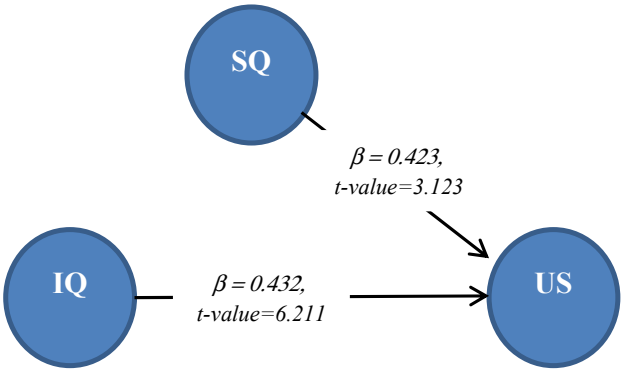

Fig. 2. Hypothesis Testing

The results of hypothesis testing on the influence of each independent variable on the dependent variable can be described as follows.

Table 3
Direct Effect Analysis

Hs	Path	β	p-value	t-value	supported
H1	SQ→US	0.423	0.000	3.123	Yes
H3	IQ→US	0.432	0.000	6.211	Yes

4.7 The relationship between e-service quality and user satisfaction

Based on the results of the analysis, the p-value of 0.000 is less than 0.050, so it is concluded that there is a significant relationship between e-service quality and user satisfaction. According to Praditya et al. (2023), user satisfaction is more concerned with the user's view of the information system, but not with aspects of the technical quality of the system in question. According to Rahman et al. (2021), the quality of an information system is a characteristic of the inherent information about the system itself. Perceived ease of use, which is the level of how much computer technology is felt to be relatively easy to understand and use. This shows that if information system users feel that using the system is easy, they do not need a significant amount of energy and time to use it, so they will be happier working and feel satisfied (Uchenna & Nworah, 2020). According to Syahril et al. (2022), e-service quality has an important role in increasing information user satisfaction, e-service quality makes a positive contribution to organizational performance and user satisfaction and loyalty. According to Praditya and Purwanto (2024), e-service quality plays a significant role in increasing user performance and satisfaction. e-service quality in an organization will encourage user satisfaction (Uchenna & Nworah, 2020). Other research conducted by Setiawanta (2022) and Syahril et al. (2022) stated that e-service quality users will be more comfortable and satisfied if the information presented is of high quality.

The findings of this research also confirm that user satisfaction can be influenced by system quality. Confirming other research by showing results that system quality affects user satisfaction. The results of this research are also in line with other research showing different results that system quality does not have any significant effect on user satisfaction. The research results also support Rahman et al. (2021) and Rohana's (2019) research results providing empirical evidence that the quality of information systems has a positive and significant effect on user satisfaction. The research results indicate that users of the e-government system will feel satisfied if the e-government system provided by the university has good system quality. This shows that users will feel satisfied if the e-government system provides guides that are easy to understand, the e-government system presents material according to learning needs, the e-government system supports the learning process, the e-government system is easy to operate, the e-government system makes communication between teachers and students more intensive, as well as easier access to e-government system features (Fahmi et al., 2022). On the other hand, when the e-government system provided by a university has low system quality, it will have an impact on the low level of user satisfaction. The results of this research state that there is a positive influence of online service quality on customer satisfaction. The completeness of online service quality, which involves seven dimensions of service quality, plays a very important role in providing the performance of internet banking service facilities. The more complete the internet service features, the greater the user's satisfaction in using the facility.

4.8 The relationship between information quality and user satisfaction

Based on the results of the analysis, the p-value of 0.000 is less than 0.050, so it is concluded that there is a significant relationship between information quality and user satisfaction and the quality of information has a significant effect on user satisfaction. Considering that the estimated value has a positive sign, this means that there is a direct relationship between information quality and user satisfaction, namely that the higher the quality of information provided by the e-government system, the better it will lead to a higher level of user satisfaction of the e-government system. Information quality is the quality of the output in the form of information produced by the information system used. Users of information systems certainly hope that by using the system they will obtain the quality of information they need (Alanezi et al., 2012). The characteristics of the information produced by a particular information system may be different from information from other information systems. An information system that can produce information that is timely, accurate, appropriate to needs relevant and meets other criteria and measures regarding the quality of information will have an impact on user satisfaction.

According to Sharma (2021), information quality is a characteristic of the results obtained in information systems, including management and the web. Based on this, it can be measured to see how appropriate the output obtained from the information system used is. Information quality is a result that can be a collection of information for further use and reference. If the quantity produced is good, it can automatically be relied on for making decisions. If the information produced is not good, it will have an impact on satisfaction with using the system. The feeling of satisfaction is an expression made by a person when the results of expectations and reality in a product or performance are in line with expectations before using the product or performance. As a system user, users will hope that the system can run according to the user's expectations. The characteristics resulting from the information obtained may differ from other systems. Information systems quality, namely being able to be on time, with a high level of accuracy, effective, and able to meet the expectations of its users. This will certainly have a big influence on satisfaction with using the system.

The use of management information systems has many benefits in the immigration department, as previously explained, the purpose of management information systems is for decision making. This affects management and the organization. Data is an important source for decision making in the immigration department. Accurate data is needed in a business since this data is a tool that will be related to strategic decisions. Through a management information system, data will be entered and then processed automatically, thereby helping the management team's tasks be more effective and efficient. Moreover, with systematic data, it will make it easier for management to process data in real time in the immigration department.

Management information systems also provide information services that can be used as a basis for planning, directing, and supervising the management team. From the resulting information data, the data is then used by other divisions that need the data. Data exchange between one division and another can form healthy relationships within the immigration department. Not only that, but the management information system also helps in delegating tasks to other parties easily. Coordination with the system is carried out quickly without having to meet in person. When information data has been collected and processed accurately, of course this will affect the quality of human resources. Because like it or not, human resources who use this system must understand technology. With quality human resources, it will influence the immigration department for development in the future. When the management information system is running in the immigration department, there will be minimal human error. Because everything is executed systematically. The minimum number of errors that occur will increase the work productivity of employees in the immigration department. That way, reducing operational costs with the help of information systems. It is easier for employees to analyze company performance from year to year because all data and changes that occur are stored in the system. With the help of a management information system, it becomes easier to analyze the business you run from year to year, because all changes have been stored in the system. The benefit of using a management information system is that it makes it easier for management to plan, direct and supervise the running of the business.

5. Conclusion

The better the perception of system quality, the greater the satisfaction of e-learning system users. These findings confirm previous research which states that system quality has a significant effect on user satisfaction. This finding confirms one of the theories which states that the measure of user satisfaction with a computer system is reflected by the quality of the system owned. The better the perception of information quality, the greater the e-learning system users' satisfaction. These findings confirm previous research which states that information quality has a significant effect on user satisfaction. These findings confirm one theory which states that information quality is a key dimension regarding end user satisfaction instruments. The quality of e-Government Services should continue to be developed in its implementation, especially emphasis on service reliability and ease of access. Reviewing page accessibility and response speed is very necessary for optimization implementation of e-Government services. The delivery of information should be reviewed in more detail before disseminating information. This research concludes that the demands of technological developments continue to change rapidly and the needs of society in terms of quality public services so that the implementation and development of E-Government must be carried out in Indonesia and the government must accelerate digital to optimize public services. Strengthening of telecommunications infrastructure, governance, services and human resources is needed to improve the quality of public services using E-Government. There needs to be cooperation between the central government, regional government and the community to commit to implementing digital government By implementing e-government in public services, various conveniences and efficiencies

can be obtained both for the public bureaucracy as a service in the public interest and for the community so that synergy and public trust in the government will be created in providing the best service for various community needs in managing its administration. The quality of information influences customer satisfaction, which means that the better the quality of the information, the more precise the decisions taken will be and will increase customer satisfaction because the information obtained by users is complete, relevant, accurate and timely. Quality provides an incentive for customers to establish a strong relationship with the company. In the long term, ties like this allow companies to thoroughly understand customer expectations and their needs so that companies can increase customer satisfaction by maximizing pleasant customer experiences and minimizing or eliminating unpleasant customer experiences.

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